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THE MEDICAL TREATMENT OF CHOLELITHIASIS

BY H. B. ANDERSON, M.D., L.R.C.P. (Lond.), M.R.C.S. (Eng.)

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ONE need scarcely apologize for bringing before a society of this kind the treatment of a condition so common and important as cholelithiasis, considering the wide diversity of opinion which still exists among competent authorities as to the best procedure in certain phases of the disease. No one questions the wide field which surgery occupies in the treatment of cholelithiasis, nor the excellent results which in many cases can be obtained only by surgical means.

The question rather has been raised as to whether there is any efficient medical treatment for any stage of the condition, or if the diagnosis of cholelithiasis carries with it in every case the responsibility on the part of the medical attendant of advising early recourse to operation. Curiously enough, physicians have been amongst those who have taken the most extreme position in advocating early surgical measures. Thus Billings says, "Gallstone disease must be recognized as a surgical disease, and in view of the many possible consequences, the most conservative physician may well hesitate to take the responsibility of non-surgical treatment." Dieulafoy, entirely dismissing medical measures, says that, "When once the diagnosis of calculous cholecystitis has been made recourse must be had to surgical intervention."

When physicians are such strong advocates of operation one is more readily prepared for the opinion expressed by Bland Sutton that, "The best and wisest physicians are those who

Read at the annual meeting of the Canadian Medical Association, London, Ont., June, 1913.

point out to their patients that surgical assistance constitutes the best remedy"; or by W. J. Mayo, who says that, "Whilst it cannot be denied that temporary palliation can be procured by non-operative measures, the cure of the patient can only be brought about by surgical means." Sir Berkeley Moynihan is no less emphatic: "I hold that when once a diagnosis of gallstones has been made, operation is always indicated unless there are grave reasons forbidding resort to surgery. Reasons should not be asked for to support a plea for operation, but in order to justify any other course. For surgical treatment—all things considered—is far safer than medical treatment; it is *curative*, not palliative; its results are *permanent*, and not *temporary*."

On the other hand, Kehr, a surgeon of the widest experience in this disease, with a record of nearly two thousand operative cases, and one to whom we owe much of our present knowledge of cholelithiasis, in an address before the *Berliner Medizinische Gesellschaft*, affirmed that in at least 80 per cent. of all cases of cholelithiasis "medical measures alone will suffice," basing his opinion not only on his own observations, but also on the results of the extensive investigations of Aschoff and Baumeister into the pathology of the disease.

When so wide a divergence of opinion exists among recognized authorities, where in the meantime may one look for the safest guidance as to the course to advise in a particular case? The position taken by Mayo Robson that "Medical treatment must be tried fully before surgical measures are resorted to, but if after a fair trial medical means fail, surgical treatment should be adopted before serious complications supervene, and before the patient is reduced by jaundice, suppuration, or other untoward manifestations," appears, so far as one can judge from recently expressed opinions, to represent pretty accurately the views of the majority of internists in different countries, and I believe is most nearly in accordance with recent investigations and clinical experience.

It must be recognized, even by those accepting the most extreme views as to the general advisability of surgical treatment, that it is impossible of application in many cases, owing to the patient's physical condition, and that therefore in such cases the only hope of relief is in medical measures. In this connexion one need only recall advanced arteriosclerosis, cardiac disease, renal disease and diabetes, and when one considers that cholelithiasis is especially a disease of advancing age, it is obvious that many of the cases fall into the class in which, for this reason, operation is pre-

cluded. It would, therefore, be unfortunate for us to take an unwarrantably pessimistic view of the only measures available in many cases.

It cannot be denied that during the last few years the tendency in Great Britain and America, influenced by the experience and teaching of so many eminent surgeons, has been to regard all cases of cholelithiasis, with the exception of those in which some definite contra-indication is present, as calling for operation.

It is equally true, however, that most physicians and surgeons alike have receded from the position which formerly attached so much importance to the mere mechanical presence of gallstones. Following the teaching of Naunyn, Kehr, Aschoff, and other German investigators, a much broader view of the whole pathological process is being taken, in which the formation of gallstones is regarded as a mere incident of a disease, in which *bile stasis, infection, and more or less wide-spread inflammatory manifestations* are of *primary* importance, and against which treatment, whether medical or surgical, must be directed. Attention is being directed more to *biliary stasis, infection and inflammatory manifestations* rather than focussed on the *secondary* result—the calculi. Kehr considers the calculi in inflammation of the biliary passages in the same light as the fæcolith in appendicitis—a product of the inflammation.*

All these authorities believe that medical measures may be effective in relieving the inflammatory trouble in many instances, and in producing a virtual cure. Physicians have long since abandoned the attempt to dissolve gallstones as a primary object of treatment, and surgeons are realizing that the mere removal of gallstones by operation does not constitute a cure. The idea of *stasis, infection and inflammation*, is dominating therapeutic aims. This being the case, medical and surgical treatment are no longer opposed, but rather complementary to one another. In cases where good drainage can be secured, so that stasis, inflammation and infection are relieved without operation, and the patient remains free from symptoms, this is accepted as evidence of the absence of serious local irritation by the gallstones. If by reason of the mechanical effects of the gallstones or for other cause the symptoms of infection do not subside, then operation is indicated for its relief. Kehr's statistics show that results of operation at this time are al-

* Since Aschoff has shown that *non-inflammatory cholesterolin calculi* may occur following bile stasis and certain metabolic disturbances, as in pregnancy, Naunyn's view as to the *invariable* presence of infection underlying cholecystitis is no longer tenable on pathological grounds, though clinically the fact remains that these cases are unimportant so long as no infection occurs.

most as good as in early operation. The belief that gallstones might be dissolved was long held by many physicians. Naunyn thought this might occur in rare instances. This view has been largely discarded, but some recent investigations by Hansemann have reopened the question. He has apparently proved by experiments *in vitro*, and by transferring gallstones from human beings to dogs, "that gallstones are soluble in normal bile, particularly stones composed largely of cholesterin." He believes, therefore, that if by treatment, the catarrhal condition of the bile passages can be cured, inflammatory products removed, and the bile restored to its normal condition, the stones will be dissolved spontaneously. Treatment, according to him, should be undertaken with this aim in view, rather than with a view direct to action on the gallstones. The article is accompanied by a number of illustrations, showing sets of gallstones in various stages of being dissolved, the research reported establishing once more that normal bile under normal conditions does not permit concretions to develop, and will dissolve in time those already formed. The peculiar shape of the gallstones found at the operation in many cases is due to their being partly dissolved. Hansemann's work, if confirmed, will obviously have an important bearing on treatment.

The quiescence or latency of gallstones in any case is now denied by some advocates of early operation, who believe that, if *clinically* quiescent, gallstones are *pathologically* active. Convincing data, however, have not been brought forward to establish their views, which seemed based largely upon personal opinion.

Apart from the question whether gallstones may or may not be dissolved, so long as the teaching, based on autopsy records and clinical experience, was accepted that in over 90 per cent. of all cases they remained latent, medical treatment had a safe objective point. If the infection, bile stasis and attendant inflammation, which have been shown to be the causes of gallstones, could be removed, and they remained merely as innocuous occupants of the gall-bladder, then a natural tendency to a *virtual* cure was indicated. If, therefore, in a given case, this latent condition could be brought about and maintained, both the physician and the patient were satisfied with the results. It must be admitted that in many cases formerly regarded as latent, fuller knowledge and improved diagnostic technique would now recognize gallstones as the underlying cause of digestive disturbance, flatulency, etc. We are greatly indebted to surgery for this knowledge, but it has not established the view that gallstones are never latent.

Apart from his experience with large numbers of cases, and the opportunity of seeing the pathological conditions at operation, the advantages of observation are not all on the side of the surgeon. The physician is usually able to follow his cases over a longer period, and often has a better opportunity to study, not only the initiation of disease, but ultimate results. The surgeon, moreover, deals with the more severe cases, those which have resisted medical treatment: in other words, the class of cases which all are agreed properly belong to the domain of surgery.

His experience being with the more severe, more resistant and complicated cases, he naturally takes a more serious view of the disease, and thus of the *hopelessness* of other than surgical relief. Dealing only with surgical measures, he is not in a position to estimate as fully the value of non-operative treatment as the physician, who has seen even a limited number of cures without operation.

While accepting the data supplied so abundantly by the surgical clinics, one may properly question if the broad generalizations sometimes made therefrom are in accordance with established facts. The teaching of Naunyn, Kehr, Aschoff, and others, as before mentioned, that stagnation of the bile and infection are the chief underlying factors in the development of cholelithiasis, is now generally accepted. Obesity, pregnancy, ptosis of the viscera, faecal stasis, infections in the portal area, and metabolic disturbances, are well recognized contributory causes. Gallstones are the *results* of these factors, and not the primary cause of the disease. If the basis of rational treatment be the removal of the cause of the trouble, are we warranted in concluding that a cure has been effected when the removal of these causes is only *incidental to*, and *not the main object of treatment*? Gerster, in studying the causes of failure after operation, has recently directed the attention of his surgical colleagues to the advisability of a more careful consideration of the teaching of Naunyn.

The spectre of danger from the development of serious, perhaps irremediable, complications from delayed operation is usually raised by the surgeon, his views naturally being based on the class of cases coming to him for relief. But it will scarcely be argued that his experience represents the average of those who have to deal with cases of all degrees of severity, from the mild or latent to the most serious. In proportion to the general incidence of gallstones, in from 5 to 10 per cent. of autopsies, the occurrence of many of these most serious complications, such as cancer, gangrenous cholecystitis, gallstone ileus, etc., is so infrequent that the danger of their

development in a given case is too remote to constitute *in itself* a reason for operation as a *general procedure*. Is it correct to assume that recourse to early operation would appreciably reduce the general mortality by forestalling these rarer complications, when in the majority of all cases gallstones are latent, or at least do not produce symptoms sufficiently definite to permit of a diagnosis, and especially when the course of the disease will give timely warning in most of the diagnosable cases, and direct them to the surgeon? I believe that many clinicians will agree with Kehr that it is fortunate that we are unable, by the x-rays or other means, to recognize the quiescent causes, if the presence of gallstones *per se* is to be taken as an indication for their removal.

But again it is claimed that operative cures are permanent, whereas medical cures are merely palliative. This statement, however, is scarcely in accord with our knowledge of the pathology of the disease or our clinical experience. After operations the bile stasis, infection and inflammatory changes must subside, and the underlying causative factors be removed, before the patient can be regarded as cured.

If the gall-bladder is not removed, and if the causes underlying the original infection which produced the gallstones remain or recur, on what grounds have we a right to claim that the stones will not form again, as in the first instance? Operative procedures have not been in vogue a sufficient length of time to determine definitely how frequently recurrences may take place, but that they do occasionally is well known. I have at present a case under observation, with symptoms of recurrence six years after operation. Gerster, in a paper on "Unsuccessful surgery in disorders of the bile ducts," reports 11 per cent. of relapses in fifty-seven operative cases, and quotes Ochsner's failures as 15 per cent. in *calculous* and 54 per cent. in *non-calculous* cases. It is therefore apparent that the claims of *certainty of cure* and *permanency of result* after operation cannot be accepted without qualification.

The danger from operation, even in the most skilful hands, is not to be overlooked. The mortality in Mayo's series of four thousand cases was 2.57 per cent., and in the cases collected by Bland Sutton from the English hospitals in 1905, 17.7 per cent., the results varying with the conditions calling for relief and the experience and skill of the operator. Nor must we confound recoveries from operation with the cure of the patient's ills. As with medical cures, only time can show the permanency or otherwise of relief. Gerster and others believe that drainage after opera-

tion is essential for the relief of the infection, and undoubtedly this is the case. It is remarkable, however, that in non-calculous cholecystitis, where the infection and its sequences alone are to be dealt with, operation frequently fails to give relief.

Viewing the brilliant results so often achieved by operation in cases where medical measures have failed to afford relief has tended, I believe, to make many take too pessimistic a view of non-surgical treatment. The strong opinions expressed by Kehr, Naunyn, Aschoff, Hansemann, Bain, Solis-Cohen and others as to the effectiveness of medical treatment, are widely held by many practitioners of lesser experience, and these opinions must not be dismissed too lightly. I have a considerable number of patients who remain perfectly well, so far as all symptoms or other evidence of disease is concerned, for periods varying from fifteen years or less.

The non-operative treatment which has had the widest vogue and has longest held the confidence of the profession, is the Carlsbad cure or some home modification of this treatment. This consists chiefly in the copious use of hot Carlsbad Water or Carlsbad salts dissolved in hot water. The waters of Vichy, Ems and Neunahr have a similar action. In addition rectal injections of hot water are sometimes used. The diet should be plain and unirritating, and the intervals between meals should not be too long. Some authorities attribute little importance to diet, but I have repeatedly seen dietetic indiscretions followed by a lighting up of acute symptoms. The administration of bile salts and salicylates for their chologogic effect, and of urotropin as a biliary antiseptic, is generally considered of value.

A point which is too frequently overlooked after an acute attack, is the necessity of *prolonged rest in bed*, not alone until all symptoms have disappeared, but until pain, and tenderness on pressure have passed away, and sufficient time has elapsed for the subsidence of the local inflammation of the bile passages, re-establishment of drainage, and the disappearance of infection. This usually necessitates three or four weeks absolute rest in bed. Hot poultices are of value during the acute stages. I do not believe that any case has been given the full benefit of medical treatment where complete rest for some weeks has not been carried out. Vaccines have been suggested to assist in removal of the infection, but of these I have no personal knowledge. In the subsequent management of cases, the treatment of visceroptosis by a suitable abdominal support, the avoidance of faecal stasis and recurring infections in the portal area (appendicitis) are very important.

It is interesting to note that prolonged rest is an essential factor in the surgical management of the disease.

Time will not permit of my entering into a detailed discussion of the medical treatment, nor indeed is this necessary.

In conclusion, I believe the following statements are fairly warranted by our present knowledge of the disease:—

1. That while surgical procedure is frequently the best, and often the only means offering a chance of relief, its advocacy, based on certainty of cure and assurance of non-recurrence, is not borne out by results.

2. That the main object of treatment is the relief of the infection and inflammatory changes, and not merely the removal of the gallstones. So long as there is no recurrence of the inflammatory attacks, there will be no attacks of gallstones.

3. That recovery not infrequently occurs under non-operative treatment, especially in early and mild cases, and particularly after first attacks, before serious local damage has been produced by the infection.

4. Medical treatment should be given a fair trial in all cases where the patient's physical condition does not warrant operation, and with the numerous patients who refuse operation. In many such cases I have seen complete and permanent recovery from all symptoms of the disease.

5. Medical treatment is indicated in many cases as a preliminary to operation, and in order to allow the acute infection to subside as far as possible.

6. Medical treatment is indicated in all cases *after operation* to allow of complete subsidence of the infection and, if possible, to prevent re-infection and recurrence.

7. I believe that it would make for clearness of thinking and give definiteness to therapeutic aims if we adopted the suggestion of Naunyn and gave up the term cholelithiasis and classified these various infections of the biliary passages as *cholangitis*, with qualifying terms such as *simple*, *catarrhal*, *suppurative*, *gangrenous*, *calculous*, etc., according to the condition present in the particular case.

Personally, I never advise strongly against operation in any case unless it is definitely contra-indicated, but, after explaining the possibility of failure, and that operation may eventually be required, I do not hesitate in early and mild cases, and especially after first attacks, to give medical treatment a thorough trial, and have found that in many instances excellent and permanent results have been obtained.

SYPHILITIC INFECTIONS OF THE CENTRAL NERVOUS SYSTEM

BY C. EUGENE RIGGS, A.M., M.D.

Saint Paul, Minn.

THERE have been no more remarkable years in medicine than the last decade. In 1903 Metchnikoff infected apes with lues, thus robbing syphilis of its mystery and giving it a definite standing among infectious diseases. Schaudinn discovered the *spirochæta pallida* in 1905, while Wassermann announced his famous reaction in 1906, and Ehrlich gave to the world salvarsan, that synthetic substance that possesses a unique dual property, viz., a remarkable spirocheticidal activity and an absolute innocuousness to the infected tissues, in 1909. These notable results would seem to have followed each other in an ordered sequence and thus prepared the way for the no less brilliant researches of Noguchi and his co-labourers. In 1912, the former discovered the pallida present in twelve out of seventy paretic brains he was investigating. In a later report, he states that he has examined two hundred brains of paretics and twelve spinal cords of tabetics; the spirochetes were found in forty-eight brains of the former and one spinal cord of the latter.*

These findings have greatly simplified the complex problem of syphilogenous nervous disease. Paresis and tabes are the direct result of the action of the pallida on the cortical and spinal neurons. This underlying pathological process is not found in other forms of syphilitic nervous disease, although the lesions of paresis have been observed coëxisting side by side with those of cerebral and tertiary syphilis. While Fournier's theory of parasyphilis is, in the light of recent researches, no longer tenable, yet there still remain certain

A clinical address delivered before the Manitoba Medical Association, Brandon, Manitoba, June 6th, 1913.

*Marinesco has found the spirochetes in the cortex in 2 out of 26 paretic brains he has examined. Forster and Tomaszewski, after the method of brain puncture devised by Neisser and Pollak in living subjects, have succeeded in demonstrating by dark ground illumination, active spirochetes in 8 out of 20 cases investigated. Levaditi, Marie and Banchowski have recently demonstrated (July, 1913) the spirochetes in brains freshly obtained, in 8 out of 9 cases of general paralysis. They prefer the ultra-microscope. They have also used staining with India ink and Fontana's method (a modified silver process) with positive results.

difficulties awaiting solution. Why are the pathological findings in paresis and tabes so absolutely distinctive? And why do they differ so radically from those observed in nervous syphilis? Can it be due to the personal equation, or to the neurotoxic action on the part of the spirochetes? The following facts are suggestive of the latter theory: According to Morel-Lavallée, Bélières and Bouvaist, six men infected with lues from the same woman all developed paresis. Of three men, says Nonne, who were infected in one night by the same person, one developed tabes and two paresis. Erb states that five men obtained their tabes and paresis from the same source (Kræpelin). Brosius mentions five glass blowers who contracted simultaneously a chancre of the lip from their occupation, of whom four developed tabes and one paresis. The simple fact would seem to be that nervous syphilis, paresis and tabes are but varied expressions of a far reaching reaction to the *spirochæta pallida*. General paralysis, says Robertson, is one of the manifestations of active syphilis. Marinesco believes that in paresis we are "face to face with the results of the direct action of the *spirochæta* on the cells of the brain cortex." Tabes and paresis are one and the same disease differing only in location, extent and intensity of the process. Nageotte regards these diseases as pathologically identical, the clinical aspect being determined by the initial localization.

Diffuseness is a distinguishing characteristic of nervous syphilis. While the clinical syndrome may indicate that the brain or cord is the chief seat of attack, yet as a rule the entire nervous system is to a greater or less degree affected. Commonly it manifests itself within the first ten years following infection, occurring most frequently between the third and fourth year. Out of three hundred and thirty-five cases investigated by Nauyn, forty-eight per cent. developed symptoms of cerebral lues during the third year (Gregory and Karpas). Recently I reported a case of acute syphilitic myelitis that developed four months after exposure. Tourette has reported a case of cerebrospinal lues that occurred two months after infection. Paresis and tabes, on the other hand, do not usually occur before the tenth or twentieth year after infection. Paresis is unusual before thirty years of age, fairly frequent after fifty (Kræpelin). In sixty-five cases of tabes, Mott found the average age of onset to be thirty-seven years; the average interval of infection in one-half of these was fifteen years, while the shortest was four.

Nervous syphilis (acquired) manifests itself in two ways: First, "those redoubtable cerebrospinal localizations," says Chauf-

fard, "which constitute the darkest chapter in the history of syphilis," viz., inflammatory affections of the membranes, vascular syphilis, tertiary manifestations, arteriosclerosis and multiple neuritis. Second, progressive neuronc degeneration of certain neural systems, as the sensory neurons in tabes, and a more diffuse involvement in paresis and a combination of both of these morbid activities in taboparesis. The lesions in acquired syphilis are arteritis, thrombosis, cerebral meningitis, meningomyelitis, acute myelitis, meningitis and gumma; the more usual being basilar meningitis and meningomyelitis. Certain chronic conditions sometimes observed in the kidneys, liver and myocardium are explicable along the line of an old forgotten syphilis.

The differentiation of these various specific affections is frequently a matter of great difficulty. The researches of Wassermann, Nonne, Noguchi, etc., have greatly simplified the problem. Laboratory methods and the clinical syndrome are both needed to arrive at a diagnosis.

THE WASSERMANN REACTION. Its importance for diagnostic and therapeutic purposes cannot be over-estimated (Ehrlich). No examination can be considered final unless the four reactions of Nonne are employed, viz., Wassermann (blood serum and spinal fluid), lymphocyte count, and globulin reaction. Nonne has emphasized the fact that the Wassermann reaction is only a symptom and its absence does not invalidate the diagnosis. It is present in from eighty to ninety per cent. of syphilitics. In early nervous syphilis it is found in one hundred per cent. of the cases, in its secondary and tertiary forms the percentage may fall to seventy, and during the latest period it may reach fifty (Jelliffe). The results obtained from the original Wassermann, where only 0.2 cc. of spinal fluid is used differ radically from those obtained by Hauptmann's modification, in which increasing strengths of spinal fluid are employed. In the latter all forms of nervous syphilis, viz., cerebrospinal lues, paresis and tabes, give a positive reaction; in the former, paresis is uniformly positive, tabes not quite so constant, and cerebrospinal lues is negative. General syphilis without involvement of the nervous system gives a negative reaction even with the larger quantities of fluid.*

*Lange's colloidal gold test. Recently certain writers have called attention to this test which they regard as more delicate than those heretofore in use. To a certain amount of cerebrospinal fluid of a paretic is added in the presence of 0.4 of sodium chloride, colloidal gold solution. There results a certain change in colour which is absolutely characteristic of paresis. The tabetic spinal fluid is quite distinctive but not pathognomonic; cerebrospinal syphilis reacts in about the same dilutions. Non-specific cases either failed to react or reacted at different dilutions.

LYMPHOCYTOSIS. Ten lymphocytes to the c.mm. is pathological. Sicard, also Ravaut, have called attention to the fact that pleocytosis may antedate all neurological symptoms; it has been observed as much as two years before the manifestation of the disease (Jelliffe). According to Mott, the membranes are affected at the time of the appearance of the cutaneous rash. Lymphocytosis is not limited to nervous syphilis, and by this term I mean both the non-degenerative and the degenerative forms of the disease (paresis and tabes). It is often seen in tubercular meningitis, in essential epilepsy, multiple sclerosis, etc. The absence of lymphocytosis does not negative the presence of paresis, since it is known to be absent in 10 per cent. of these cases; it is, however, one of the earliest and most reliable indications of the onset of both paresis or tabes. In one of Boyd's cases of the former, the cell increase was three thousand four hundred.

THE DETERMINATION OF GLOBULIN CONTENT.—In the neuroses or in healthy people this reaction does not occur; in other forms of nervous disease, it is not infrequently seen, while in cerebrospinal syphilis, paresis and tabes, it is rarely absent. Globulin excess is observed in spinal tumours, both specific and non-specific; it bears a distinct relation to lymphocytosis but not to the Wassermann reaction. The Nonne-Apelt and Noguchi reactions indicate simply globulin excess. Nonne's Phase I consists in mixing equal parts of spinal fluid and a neutral solution of ammonium sulphate. If the fluid becomes milky or cloudy within three minutes, the test is positive. Noguchi's butyric acid test* causes a definite, flocculent precipitate either immediately or within two hours if globulin excess is present; in my own experience, it has been more sensitive and reliable than Nonne's Phase I. According to the latter, Phase I is never present in a luetic unless the nervous system is involved.

THE DEGENERATIVE PHASE OF NERVOUS SYPHILIS: PARESIS AND TABES. Fisher estimates that from 10 to 15 per cent. of luetics develop this type. Robertson says that from 3 to 5 per cent. of all syphilitics, or from 9 to 15 per cent. of those who have not recovered after the lapse of five years, result in paresis or tabes. Mœbius styles paresis tabes of the cerebral cortex. Of two hundred and thirty-six cases of tabes analyzed by Byrom Bramwell, 11.4 per cent. became paretic. According to Mott, 10 per cent. of general paralytics are of the tabetic type. Ten per cent. of five hundred

*To 2 c.cm. of cerebrospinal fluid add 5 c.cm. of 10% butyric acid with the application of heat: to this add 1 c.cm. of a 4% solution of sodium hydrate with the further application of heat.

cases studied by him showed marked sclerosis of the posterior columns. Fürstner is inclined to the opinion that the spinal cord is always affected in paresis, and Raymond and Nageotte assert that every paretic would show tabetic symptoms if he lived long enough.

According to Kræpelin, from 10 to 20 per cent. of asylum admissions are paretics, and it has attained its present frequency in our day. Over 13 per cent of all cases admitted to the New York State insane asylums in 1911 were cases of paresis. In Philadelphia the cases of paresis, tabes and cerebrospinal lues admitted to the neurological wards form 15 per cent. of the admissions. There has been in England a marked increase in the industrial and mining regions, and a decrease in the agricultural. It occurs more frequently in men, the ratio varying from one to four, to one to seven. In the opinion, however, of Dr. George T. Mills, of the Central Islip State Hospital, New York, this disparity does not exist, the ratio is practically the same. Hoppe finds from the figures of Altscherbitz, that one case of paresis occurs to every three thousand people in the city, while in the country only one in every nine thousand is affected. Among prostitutes, 58.5 per cent. of deaths are due to this disease (Kræpelin). Chiarugi and Haslam and Esquirol were the first to give a description of *dementia paralytica*. Bayle, in 1822, and Georget and Calmeil, in 1825, gave the first accurate portrayal of its mental and physical symptoms, thus creating a new clinical syndrome which was not, however, kindly accepted by all alienists. Griesinger regarded it as simply a combination of mental diseases, and even to-day, says Kræpelin, there are still those who look upon it as a composite of mental diseases rather than a morbid entity with a distinct anatomic-pathological basis, which makes it one of the best recognized diseases in all medicine.

Griesinger's mental attitude finds a ready explanation in the kaleidoscopic character of the mental symptoms. No description can embrace all the confusing vagaries; the symptoms may simulate those of any of the well-known forms of insanity. "Any mental complex," says Smith, "can be present in general paresis." The basic fact is a *peculiar progressive mental weakness*, and on this foundation of dementia are grouped a great variety of psychotic symptoms changeable as the sand dunes of Cape Cod, varying from month to month, and even from day to day. The conventional clinical forms are only arbitrary groups adopted for convenience, the better to facilitate the description of the clinical features of this disease. *None of them runs absolutely true*, the distinctive feature being a

slowly developing dementia associated with an organic brain disease and characteristic pathological findings.

There are three types, viz., the demented, depressed and grandiose. These paretic syndromes are often preceded by a pre-paretic or preliminary period. From the laboratory findings at this stage one may be able to predicate the appearance of paresis months or years before its evolution. Frequently the symptoms at this time are those of neurasthenia. There is marked fatigability, insomnia, irritability, lack of initiative and of concentration. The patient is less alert and keen than formerly and is absent-minded; there is moral deterioration; he indulges in all kinds of excess; is untidy and careless about his personal appearance; judgement is impaired, and the characteristic psychic weakness is clearly evident. The perceptions are very early at fault; the mental reflexes are sluggish, he cannot grasp details, is inattentive, indifferent, loses himself even among familiar surroundings, and acts as though he were mildly intoxicated or in a dream. The association of ideas is impaired, those most used being the longest preserved. The insane beliefs may all be present although illusions and hallucinations play but a minor part; delusions are almost invariable, with occasional exceptions in the dementing form. Illusions of hearing are more frequent than those of sight; hallucinations of taste and smell, while sometimes seen, are not as prominent as those of sight. Memory defects are common, especially those pertaining to recent events. There is marked difficulty in calculation; ridiculous mistakes are made in the simplest problems. As the disease progresses memory becomes totally lost.

The fantastic character of the delusions is an index of the degree of the dementia. Kræpelin refers to disturbances of will such as are seen in catatonics, viz., catalepsy, echolalia, verbigeration, resistiveness, stereotyped movements, etc., but says that he does not feel justified in creating a special catatonic form of this disease. Criminal actions are not unusual, such as sexual misdemeanors, purposeless stealing, homicides, etc. Suicide must always be kept in mind. There is a liability to senseless whims and impulsive actions; one of Kræpelin's cases stepped out of a second story window to pick up a cigar stump he noticed on the sidewalk below him. There is frequently observed a bustling, meaningless business activity and a constant letter writing. The nervous symptoms are of greater importance and give "the particular stamp to the disease." A severe initial headache is usual, dull in character. The brain feels as though it were pressed upon by a heavy

weight. Word deafness, word blindness, hemianopsia, apraxia, auditory hallucinations, etc., point to the involvement of definite cortical areas. Optic atrophy is observed in from 4 to 20 per cent. of the cases, notably those where the posterior columns are degenerated (Kräpelin, Mölis, Osler, Norris, and Oliver). Martins notes a loss of ability to recognize the taste of salt, Toulouse states a third of his cases were unable to perceive the smell of camphor. In posterior cord involvement, the sensory disturbances are characteristic of tabes; as the disease progresses all forms of cutaneous sensibility are affected. If the patient's attention is diverted, one may stick a pin through the skin without his knowing it. The loss of sensibility applies to the internal organs as well and should always be kept in mind, since only in this way can burns and serious injuries be avoided. Pneumonia may run its course without even being recognized. The face is expressionless, and both it and the tongue are subject to fibrillary tremors. The voice is monotonous; the loss of resonance is often the first symptom observed in singers. In advanced cases a persistent, rhythmic grinding of the teeth is almost invariably observed. Aphasia, paraphasia, and disturbances of articulation and of writing are of very common occurrence in this disease. Pupillary disturbances are most frequent, viz., deficiency in size, distortions of the pupillary outlines, loss of consensual light reflex and Argyll-Robertson pupil, the latter occurring in from 50 to 70 per cent. of the cases (Westphal, Räcké, Siemerling, Franz). *The Argyll-Robertson pupil means simply that the nervous system has been infected with lues; it is not pathognomonic of paresis.* It is, however, a warning of the danger of paresis and tabes (Gowers, Babinski).

A sluggish light reflex is an incomplete stage of the Argyll-Robertson pupil and is frequently seen in incipient paresis. Loss of light reflex is due to the action of a particular toxin on certain nerve cells or fibres, the exact position of which is still a matter of doubt; *it is not always due to an actual degeneration, since it may come and go from time to time* (Robertson). Argyll-Robertson pupil may occur in acute alcoholism and hysteria. Loss of sensory light reflex—a dilation caused by pain as from a prick of a pin near the eye—Bevan Lewis regards as one of the earliest pupillary symptoms in paresis. Loss of light reflex and accommodation may occur at the same time or accommodation alone be lost.

Most important of the motor disorders are the epileptiform and apoplectiform seizures; the former usually manifest themselves as a cortical epilepsy, less frequently there is a severe general convulsion. The body temperature is generally elevated during a seizure.

From twenty to one hundred attacks may occur in twenty-four hours, and the seizures may occur continuously for a fortnight. Almost invariably after the cessation of these attacks, there is a decided increase of the mental weakness. The apoplectiform seizures occur suddenly with loss of consciousness, stertor, coma, rigidity or flaccid paralysis; there may or may not be residuals. On the sensory side there are similar attacks—psychic equivalents, characteristic of essential epilepsy. Any of these forms may occur at any stage of the disease. The apoplectiform attacks belong usually to its earlier period; in the beginning they are usually light and become more severe as the disease progresses. Paretic seizures are probably the result of new invasions of the organism rather than due to vague metabolic changes and cerebral congestion (Moore).

In 75 per cent. of the cases of paresis, the knee-jerks are exaggerated, sluggish or lost (Franz); when exaggerated, the Babinski and ankle clonus are often present. There is a difference between the two sides in 18 per cent. of the cases (Räcke). The Achilles jerk disappears before the knee-jerk. De Montyel found the sexual power lost in 79 per cent. and increased in 15 per cent. of his cases. The liability to broken bones, hematoma of the ear, and pneumonia, cannot be too strongly emphasized; the hematoma auris and fragility of the bones are due to the deranged metabolism of the paretic. Temperature variations are usual; the two sides of the body may show a difference; there may be a marked elevation without any appreciable cause; in a certain proportion of the cases, it is the direct result of the brain lesion, more frequently it is due to constipation, a distended bladder, broken ribs, or pneumonia; toward the close of life it is subnormal. Sleep is greatly disturbed in the beginning and during the excited stage; later there may be somnolence so that the patient is awake only when eating or being talked to. The appetite is greatly impaired at first, the patient losing weight until the acuteness of his illness is past; later it becomes ravenous and there is rapid taking on of flesh—the obesity peculiar to paresis. The end is characterized by extreme wasting.

Our review of the various types will be as brief as a fair degree of accuracy will permit. Fortunately, thanks to the kindly courtesy of your asylum authorities, we shall be able with these five patients to illustrate quite freely the clinical syndrome of this disease.*

*Through the courtesy of the first assistant physician of the Brandon Asylum who placed at our disposal five patients for the purpose, we were enabled to present many of the clinical aspects of paresis in a very satisfactory manner. Three of the patients were clearly paretic, one was doubtful and one a case of cerebrospinal lues.

THE DEMENTED TYPE. Progressive mental deterioration with motor paralysis is its salient feature. The intellectual and social fabric speedily crumbles to ruins; mental dullness, loss of concentration, moodiness, irritability, confusion, disorientation, inability to recognize those around them, are some of its chief characteristics. Convulsions are more frequent and remissions more rare than in the other varieties. Transient delusional states are common. They may be suicidal. Depressed and expansive states at times assume marked prominence. They are gluttonous and their desire for drink is inordinate. This form comprises 53 per cent. of Kræpelin's Heidelberg cases.

THE MELANCHOLIC TYPE. This possesses in a great degree many of the features of the depressive phase of manic-depressive insanity with mental deterioration superadded. The patient is a prey to all kinds of hypochondriacal ideas and is subject to vague and indefinite sensory perversions. The delusions may be either accusatory or persecutory, and are often accompanied by hallucinations, especially of hearing. There may occur grandiose ideas, stupor or periods of intense anxiety. A marked catatonic state is sometimes present. Convulsions are more rare and the duration of life less than in the preceding type. Twelve of Kræpelin's Heidelberg series belonged to this group.

GRANDIOSE FORM (classical paresis). Either depression or exaltation may be the first symptom. These patients always "feel fine" and revel in grandiose ideas of the most senseless and fantastic nature; as illustrated by our patient with his bank of gold, dreadnaughts and other wonderful possessions. A patient of mine in the last stage, helpless and confined to bed, said he could whip Corbett and saw seven cords of wood daily; another stated he had a horse that could trot across the Atlantic in three minutes, and still another was in the habit of giving me million dollar checks when I called. The grandiose ideas are not so marked in women as in men. Paretics are readily distractible; a little skillful suggestion will turn their morbid fancies in any direction. They are liable to attacks of great excitement, when they are dangerous as wild animals. Hallucinations are not infrequent. The excitation may be tinged with a fringe of depression or hypochondriasis, indeed the clinical picture may for a time assume the typical characteristics of the manic-depressive syndrome. There is a blunting of the moral sense and a loss of all regard for personal appearance. The exaltation may last for years or it may recede, and were it not for the intellectual impairment the patient might be considered prac-

tically normal. The group comprises 36.3 per cent. of the Heidelberg series, and very properly includes the agitated type, since the latter is only the expansive form pursuing a stormy course. The most excited cases are called "galloping paresis," and because of the intense excitement they quickly become exhausted and die in a few days or weeks. Convulsions are less common and remissions more frequent than in the preceding groups.

Juvenile paresis differs from that of the adult form chiefly as to time of incidence and nature of the clinical syndrome. The pathological findings are the same in both. It develops usually during adolescence, although it may occur between the fifth and sixth year. There are often notable physical and mental defects in the child preceding the manifestation of the disease. Children who dement without apparent cause are probably instances of this condition as are also the so-called "dementias associated with epilepsy" in childhood. The clinical symptoms, while often those of the dementing form, frequently are so vague and indefinite that only by the aid of laboratory methods is it possible to arrive at a diagnosis. Convulsions are very frequent. Kræpelin reports four hundred and fifty in a single week in one of his patients.

The termination of these mental complexes constituting paresis is ultimately death. Dementia becomes absolute, there is extreme wasting and existence is purely vegetative; cardiac failure ends the tragedy.

The duration of paresis may vary from a few months to many years (thirty-two years, Alzheimer's case). Fifty per cent. die in one year; 75 per cent. in two years, 90 per cent. in three years (Robinson). Remissions occur in 20 per cent. of the cases; they are seen in all forms, but are most frequent in the grandiose type. They may occur suddenly or be of gradual evolution. It is usually a matter of weeks or months for the remission to reach its full development, and its duration is usually of a few months; three or four years is uncommon, while many years is most exceptional. Among these latter are Halban's patient, eight years, Dobrschansky's fourteen years, and Tuzcek's twenty years.

According to Nissel and Alzheimer, there is in paresis a definite anatomical process which is not found in other forms of nervous syphilis (Jelliffe). In long-standing cases the brain is atrophied and the dura is adherent in patches to the skull. The cortex is greatly shrunken so that its breadth is reduced often by one-half, and the destruction taking place in it is greater than in any other disease. The pia is cloudy, thickened, infiltrated and adherent, so

that when it is removed the cortex is badly lacerated. Periarteritis and infiltrations by lymphocytes is usual. The ventricles are dilated and the ependyma is covered with hyperplastic granulations of neuroglia. Taken singly, the changes in the cortex have no differential significance since they may be observed in other diseases, but when considered in their totality they are diagnostic of paresis. Accumulations of plasma cells in vessel sheathes are of all cortical changes the most important, because they are never absent in general paralysis, and they show a characteristic distribution. Rod cells in the neighbourhood of the vessels are seen in other diseases but in smaller numbers and not remote from the meninges as in this disease (Kræpelin). New vessel formation, endothelial proliferations, grave cell alterations, with the associate destruction of nerve fibres and neuroglia overgrowth, all add to the completeness of this pathologic picture. Loss of nervous tissue is generally accompanied by a corresponding increase of the neuroglia. Similar, but not so severe changes, are seen in the cerebellum, basal ganglia, pons, medulla, spinal cord, sympathetic ganglia, peripheral nerves, etc. Straub found in 82 per cent. of his cases a diseased aorta. The bones and body viscera are usually affected in a marked degree.

The diagnosis of paresis is frequently beset with great difficulty: a mental trouble occurring in a middle-aged man for the first time should suggest paresis, especially if there is a history of a previous lues. The mental symptoms may be so varied, confused and shifting that they suggest a combination of "disease pictures" rather than one of the best known types in psychiatry. Each clinical form may, chameleon-like, assume the characteristics of any of the others. But of still more importance are the neurological signs, chief among which are Argyll-Robertson pupil and irregularity of outline of pupil, optic atrophy, sensory disturbances, notably hypalgesia during inattention, speech defects (awkward and anxious patients often show these resembling paresis), loss and exaggeration of knee-jerk, epileptic and apoplectiform seizures, etc., some of which may precede by years the onset of the disease. They are probably the index of a syphilized nervous system, the degenerative process not yet having begun. That the diagnosis of paresis cannot be made with accuracy from the clinical syndrome is shown by Southard who followed to the post-mortem room and laboratory forty-one well marked cases in which the entire medical staff of the asylum agreed that on clinical grounds the diagnosis of paresis was certain. His examination proved that there were six errors, or 15 per cent. If incipient cases were included with those that are

well marked the error would certainly be very much greater. It is only by calling to our aid the sero-biological reactions that we can with any certainty arrive at a diagnosis. When all four reactions are positive, especially if small quantities of spinal fluid—from '05 to '2 cc. (Jelliffe)—are used, the case is almost invariably one of paresis. A positive reaction on the part of the blood serum and spinal fluid may occur in all forms of nervous syphilis—in cerebrospinal lues, paresis and tabes, and under such conditions it must be interpreted in the light of the clinical symptoms. Both fluids may give a negative reaction in stationary paresis. In one per cent. of the cases the blood serum, and in six per cent. the spinal fluid, reacts negatively (Robertson). Occasionally the reaction is that indicative of cerebrospinal syphilis, viz., positive blood serum with lymphocytosis and globulin excess. The diagnosis of paresis, which is equivalent to passing a death sentence, should not in our present state of knowledge be lightly made.

The abolition of paresis lies in the prevention of syphilis, and writers are sadly at variance as to whether antisiphilitic treatment will prevent paresis. Fournier believed it possible. According to him only five per cent. of syphilitics received adequate treatment, while on the other hand, Kriss, Schuster and Junius and Arndt are far from being convinced as to this efficacy of mercurial treatment. The early recognition, in the so-called preparetic stage, probably the incipient period of the degenerative process, is of great importance, since this is the one time favourable for successful therapy. Availing ourselves of the modern methods, we should be governed by Fournier's dictum: "*Strike hard, quick and often.*"

In the presence of paresis and tabes, there is some excuse for therapeutic nihilism. The former is more intractable than the latter to treatment, and both are much less amenable than the other forms of nervous syphilis. Generally speaking, the longer syphilis has existed the more resistant it is to treatment, and paresis is one of its late manifestations. Jelliffe aptly says: "It is a question of the inaccessible spirochete." Its habitat in paresis is at a distance from blood vessels and lymph channels; the latter being obstructed interferes with flow of lymph as well as the transmission of therapeutic agents. Thus, the pallida unmolested works out its lethal purpose.

Remissions are nature's attempt at a cure. They develop spontaneously, natural episodes as it were in the course of the disease. The quiet and regular hours of a hospital regime are conducive to their occurrence. Various therapeutic measures, it would seem,

are capable of artificially inducing them; viz., first, the prolonged injection of small doses of tuberculin, from 0.01 to 0.1 mg.; second, the injection of bacterial toxins. Kræpelin suggests that since septic organisms hinder the propagation of the spirochetes, it may be possible to use them as allies in the fight against paresis. Third, the use of nucleic acid and metallic ferments. Fischer, every three to five days, injects his paretics with 0.5 gramme of the sodium salt of nucleic acid in 10 per cent solution. He reports four remissions as following this treatment in twenty-two cases. Thus it is believed that by the use of these agents we produce leucocytosis and stimulate the natural defense of the organism against the spirochetal onset. The period during a remission, when all medical care and oversight are discarded because they are considered irksome and unnecessary, is in reality the time when treatment should be most vigorously pushed. At present the cure of paresis can neither be affirmed or denied. An ambition to accomplish this will ever be the best stimulant to a persistent endeavour. There is not the slightest doubt that treatment can influence, even if it does not arrest, the paretic process, as is shown by a decrease in lymphocytosis and a diminution in the intensity of the Wassermann reaction. This may become negative and remain so a year or more, as it did in Alt and Willig's cases.

When we recall what has been accomplished in that hitherto incurable disease, sleeping sickness, one ought not utterly to despair of paresis. In the last few years, Martin, in the Pasteur Hospital in Paris, has treated forty cases of the former; of the first twenty patients, eleven died; of the next ten four died, while all of the last ten cases recovered. Two patients of the last series were under treatment for more than three years. These remarkable results were due to improvement in the method of treatment (Chauffard).

Since in paresis we are dealing with a desperate disease, Robertson believes that we are justified in employing desperate remedies; that we should be governed by the same principle that influences the surgeon in hopeless conditions: while he counts on almost a certain fatality, he feels justified in assuming the risk. The ethics in each instance are the same, and we should not hesitate at radical procedure even though death sometimes result.

The administration of salvarsan is not without danger. Gibbard and Harrison are authority for the statement that up to 1912 about one hundred and fifty deaths have been due to it, but that during the same period less than a dozen have died from the Herxheimer reaction, and they do not agree with Ehrlich's opinion

that this is due to a liberation of endotoxins, but rather to an overdosing with salvarsan of a patient peculiarly sensitive to arsenical preparations. According to them also, the neurorecidives are not in any sense a neurotrophic action of salvarsan, but should be regarded as evidences of a syphilitic relapse.

Since the researches of Noguchi and Moore and Marinesco, my views in regard to therapy have undergone a radical change. My conviction is that in every case except the very advanced, modern methods of treatment should be vigorously applied; nothing could be more absolutely futile, even fatuous, than the routine use of the combined treatment so generally used. Long experience has demonstrated that mercury is of no value in clearly developed paresis. Kræpelin, indeed, believes it to be contra-indicated, as he has observed acute excitement with rapid loss of strength follow a course of inunctions. Bucholz also reports two cases of "galloping paresis" developing under the same conditions.

With rare exceptions the conventional dose of salvarsan, 0.6 gramme, may be given, always intravenously. Gennerich regards an intensive course of salvarsan as consisting of 4 grammes, while on the other hand Dreyfuss advises a maximum amount of from 6 to 9 grammes, distributed during a period of from eight to twelve weeks. Are we then justified in our endeavour to reach the spirochetes burrowing among the nerve cells in the cortex, in using or even in increasing these massive doses of Dreyfuss? Certainly the patient's welfare will be in no manner compromised, since untreated his malady has only one inevitable end—death.

THE INTRASPINOUS METHOD. The choroid plexus exerts a marked control over the composition of the cerebrospinal fluid (Flexner). Relatively few drugs are capable of passing this barrier; notable among these is urotropin which does so freely, while on the other hand potassium iodide entirely fails to do so. Only detectable quantities of arsenic, which quickly disappear, are observable after the intravenous injection of salvarsan. The cerebrospinal fluid occupies the subarachnoid spaces and communicates with the canalicular system surrounding the vessels and nerve cells of the brain and spinal cord (Mott), and furnishes the most direct path of access for curative agents. This fluid must be made the purveyor of these substances, for only in this way can we reach the otherwise inaccessible nervous tissues. The intraspinous method, therefore, is the logical procedure in the treatment of syphilitic infections of the central nervous system.

Experiments on rabbits have shown that arsenic injected intra-

spinally is a dangerous procedure and not to be considered; the only way to introduce it with safety into the rachidian fluid is by the use of salvarsanized serum.

Serum derived from patients suffering from secondary syphilis, who three days previously have been injected with salvarsan, or serum from the patient himself an hour after receiving an injection of 606, has been used intraspinaly for the purpose of bringing the spirocheticidal action of the drug into immediate contact with the membranes. Robertson, of the Royal Asylum, Edinburgh, and Swift and Ellis, working in the Rockefeller Institute Hospital, have for some time been conducting some remarkable investigations along these lines. The former uses the salvarsanized serum in addition to, and in the intervals between, the salvarsan injections. The dose varies greatly, all the way from 3 to 30 cc. according to the technique employed in the preparation of the serum. The spirocheticidal action of the serum of salvarsan-treated patients is markedly increased by heating at 56° C. for thirty minutes (Swift and Ellis). Before making the injection, from 5 to 15 cc. of spinal fluid is withdrawn "until the pressure falls to 30 mm. of spinal fluid." The trying out of this method will require time and patience and will be watched with great interest.

NOTE.—Dr. Taylor informs me that in the out-patient department of neurology of the Massachusetts General Hospital, Dr. Ayer has for some months been using intraspinal injections, especially in the treatment of tabes, and that he has obtained certain definite results. Lymphocytosis may practically disappear and the Wassermann in the blood serum and spinal fluid may be changed to negative. Treatment does not seem to arrest the progress of optic atrophy in tabetics.

Myerson, of the Psychopathic Hospital, Boston, reports under observation seven cases of paresis in which there was no question as to diagnosis, and one case of "clinical paresis" in which the spinal fluid was negative; the possibility in this patient of cerebrospinal lues must be considered.

In all these cases the pathological process characteristic of general paresis was modified by the use of salvarsanized serum, and according to him the blood serum and spinal fluid may become negative and remain so indefinitely; there may also occur clinical betterment.

A well marked case of paresis, now under our care, has been remarkably benefited by the intraspinal method. Swift and Ellis in

the October issue of the *Journal of Experimental Medicine* express the opinion that we should "confine our efforts at the local therapy of syphilis of the central nervous system with salvarsan to the use of such salvarsanized serum."

TO PROVE or disprove the value of strychnine as a rapid cardiac stimulant, Parkinson and Rowlands studied the immediate effect of the subcutaneous injection of one-fifteenth of a grain of strychnine sulphate on the blood pressure, rate and regularity of the pulse, rate of respiration, and the general condition, in a series of fifty patients presenting signs of severe heart failure. In one half of the cases the rhythm was regular, in the other half the auricles were fibrillating. MacKenzie's ink polygraph was used to record the pulse and respirations, and the mercurial sphygmomanometer devised by Leonard Hill was used to record the systolic blood pressure. Records of the pulse, respirations, and blood pressure were made immediately before the injection and every five minutes for an hour afterwards. No evidence of change in the blood pressure, rate of the pulse, rate of respiration, or general condition was found, and these workers conclude that strychnine has no effect which justifies its employment as a rapid cardiac stimulant in cases of heart failure.—Abstract, *Quarterly Journal of Medicine*, Vol. VII, No. 25.

GASTRIC HYPERACIDITY

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THE term hyperacidity, as commonly applied to stomach conditions, is unsatisfactory. In the first place it is used to denote both a group of clinical symptoms and a chemical anomaly, either of which may be present without the other, and further there is no definite understanding as to the amount of acid necessary to constitute a hyperacid state.

Recent work has given us new ideas as to acidity in general and stomach acidity in particular. It has been shown that the acidity of the gastric juice depends upon the concentration of hydrogen ions present, and that this hydrogen ion concentration cannot be measured by titration with an alkali. Apart from the general incorrectness of the titration values, other factors come into play. Different indicators give greatly differing results, especially where we are not dealing with a pure acid, but have albumoses and peptones present; and even with the same indicator it is often difficult to judge the end point correctly. In using dimethylamidoazobenzol and phenolphthalein, as recommended by Toepfer, we take the end points as canary yellow and deep red, respectively, and in doing this we unquestionably run past the neutral point towards the alkaline side. Alizarin and litmus have both difficult end points to determine, while phloroglucin-vanillin, though the most exact of the free hydrochloric acid reagents, entails in its employment the tedious steaming process after each addition of soda.

The estimation of the hydrogen ion value by electrolysis is of course out of consideration as a general clinical procedure, but Michaelis and Davidsohn have formulated a method of determining the acidity by means of indicators, which is very useful for practical work. Their original plan included seven indicators, but for ordinary purposes only four are needed, namely, methyl violet 0.3% aqueous solution, tropæolin 25% solution in 50% alcohol, congo red

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·125% aqueous solution, and methyl orange ·25% aqueous solution.

The following table shows the hydrogen ion value in grams per litre.

	·1	·033	·01	·0033	·001
Methyl violet.....	Green	Green	Green	Green blue	Blue
Tropæolin.....	Burgundy red	Burgundy red	Orange	Orange	Yellow
Congo red.....	Blue p'p'te	Blue p'p'te	Blue p'p'te	B'ue violet	Blue violet p'p'te
Methyl orange.....	Red	Red	Red	Red	Red

	·0001	·00001	·000001	·0000001
Methyl violet.....	Violet-Blue	Blue Violet	Violet	Violet
Tropæolin.....	Yellow	Yellow	Yellow	Yellow
Congo red.....	Dirty red	Red	Red	Red
Methyl orange.....	Orange	Yellow	Yellow	Yellow

Place in each one of four test tubes 1 c.c. of filtered gastric contents after a test breakfast. To the first add one drop of the methyl violet solution, and to the second, third, and fourth, similar amounts of tropæolin, congo red, and methyl orange, respectively. Notice the resulting colourations, and from the table estimate the hydrogen ion concentration. The authors have figured out that

·03 and over means hyperacidity and ·0014 and under hypoacidity; thus, roughly speaking, the first two columns mean a hyperacid juice, the second two are normal, and below that we have varying degrees of hypoacidity.

I have used this method in comparison with the titration method in a large number of cases, and have come to place great reliance upon its efficacy. In the majority of cases, of course, it runs concurrently, or nearly concurrently, with the soda neutralization values, but occasionally it gives differing results, and results I think, approaching more nearly the clinical truth. A few of these I may mention:

I. Man, aged fifty-four, severe acid gastritis; dimethylamidoazobenzol value, 35; phenolphthalein value, 60; indicator value as above, ·033.

II. Man, aged thirty-five, no gastric symptoms: dimethyl values, 45 to 50; phenolphthalein values, 75 to 85; indicator value, ·01.

III. Woman, aged forty-two, gastric ulcer: dimethyl value, 23; phenolphthalein value, 40; indicator value, ·033.

Let us consider the symptoms usually ascribed to hyperacidity, and make some enquiry into their causation.

1. The presence in the epigastrium, one to three hours after meals, of a sensation varying from uneasiness, or an "all gone" feeling, to actual pain. This symptom has generally been accredited to the action of the highly acid contents upon the gastric mucous membrane, or where the contents are not excessively acid, to the increased sensitiveness of the mucous membrane. Favouring this theory is the fact that the emptying of the stomach (by tube or vomiting) or the administration of alkalis or food, will almost immediately relieve the distress; against it is the observation of Bence Jones, that a solution of tartaric acid would cause a sensation in the œsophagus but not in the stomach, and also the researches of Hertz, who showed that the mucous membrane of the stomach, whether intact or ulcerated, is quite insensitive to dilute acids. These apparently contradictory observations, I think, can be reconciled, but first let us notice some of the recent important contributions to our knowledge of the physiology and pathology of the stomach.

The investigations of Cannon and of Carlson have demonstrated that hunger pains are coincident with, and apparently due to, contractions of the gastric musculature, and that these contractions can be temporarily inhibited from the oral cavity, by mastication of food or even of indifferent substances. Hertz has stated that

gastric pain is frequently caused by excessive tension on the muscle layers in the prepyloric portion of the stomach. No less noteworthy than these is the widely recognized work of Eppinger and Hess on vagotonia. They endeavour to show that certain people, "vagotonikers" so-called, are subject to extraordinary vagus action and show corresponding rather definite group of symptoms. These symptoms of vagus hyperirritability include both gastric hyperacidity and excessive gastric peristalsis.

We can now come to a conclusion why discomfort and pain accompany hyperacidity. The peristalsis is excessive, and the advancing contractions cut deeper and deeper into the stomach lumen as the pylorus is approached; at the same time the free hydrochloric acid, more abundant than normal, reaches the duodenum and firm closure of the pylorus results. The great tension to which the muscle layers in the pyloric part of the stomach are subjected, results in pain.

Emptying the stomach of course affords relief, because the pylorusward peristalsis at once ceases, and the departure of the acid contents abolishes pyloric spasm. Similarly alkalis and food compel a temporary cessation of peristalsis from a "reception dilation," and permanent relief follows the neutralization of the acid.

2. *Pyrosis*. Unlike the mucous membrane of the stomach, that of the œsophagus is susceptible to painful chemical irritations, and the effects of this susceptibility are well demonstrated in hyperacidity. The pain-producing substance is generally understood to be the hydrochloric acid, but Hertz denies this, and places the onus upon alcohols, formed during gastric digestion. The commonest symptom is pain beneath the sternum, but more remote effects may be in evidence, such as a gnawing pain under the right scapula, soreness in the muscles of the neck, and even, as Chambers pointed out some years ago, quite typical clinical signs of lumbago. A point which may be mentioned here, in relation to this regurgitation of stomach acids, is the suddenness with which it often takes place, when the gastric distress is at its height, as if the excessive intragastric tension had forced the sudden opening of the cardiac orifice.

3. *Excessive secretion of the salivary glands*. This is a frequent condition in hyperacidity, and appears to be caused by the irritation of the glands with the acid present in the oral cavity. It is usually most marked at night, when the patient may awake to find a tasteless watery fluid pouring from his mouth. If the saliva of these patients is tested, it will often be found quite acid.

to litmus, and to this, I think, as much as to the superabundance of acid in the stomach, can be accredited the poor starch digestion.

4. Constipation. A condition of spastic constipation (all constipation is basically atonic, but for clinical purposes it is well to recognize a superimposed spastic form) is the rule in hyperacidity, and it is probably due to overaction of the vagus and its congeners, producing spasm in the intestines as in the stomach.

5. Vaso-motor symptoms. Carlson has shown that simultaneously with the contractions of the stomach, which cause the sensation of hunger, occur vaso-motor instability and giddiness, which are so common in these patients, towards the end of gastric digestion.

Of special interest are the associations of hyperacidity with other conditions:

Hyperacidity and gastric and duodenal ulcer. What bearing has hyperacidity on the formation and chronicity of peptic ulcers? Until recently it was given a big, if not the biggest, etiological rôle, but careful consideration casts doubt on this hypothesis. It must be remembered that for the mucous membrane of the stomach to undergo digestion, there must be first some abnormality in that mucous membrane, and granted that abnormality, then a peptic activity of very moderate grade would be sufficient to cause digestion and hence ulceration. Furthermore, it has been shown that hyperacidity does not conduce to peptic activity so much as normal acidity, for Michaelis and Davidsohn place the optimum at a hydrogen concentration of '016.

There is more reason to believe that the acid has a place in the prevention of healing and the conversion of the florid ulcer into a chronic, indurated one, but even here is the consideration that in chlorotic conditions, where acidity is almost invariably high, gastric ulcers heal most promptly and regularly, while on the contrary, in people over thirty, in whom we not seldom obtain an acidity that is normal or even subnormal, our difficulties in effecting a cure are intensified.

Von Bergmann, in a recent article, agrees with Eppinger's ideas of the coincidence of ulcer of the stomach and vagus hyper-irritability, and lays stress upon the causal factor of the local ischaemia following the excessive contractions. He states that out of sixty gastric ulcer patients, fifty-eight showed a definite vagotonic state, also he gives the results of Westphal's animal experiments, in which, by injecting the powerful vagus stimulants pilocarpine and physostigmine into rabbits, he was able to produce typical peptic ulcerations.

It is probable that the causation of gastric and duodenal ulcers is multiple, and that injuries, toxæmia, cardiac and arterial disease, anæmia, and vagus hyperirritability, either separately or combined, are at the bottom of most cases. An important difference between the gastric and duodenal cases has been shown by the Roentgen rays. It is that, while in stomach ulcers there is nearly always food retention, in duodenal ulceration, in spite of pyloric spasm, the stomach is emptied much more quickly than normal. This would account for the more frequent appearance of hunger pain in the duodenal cases.

Hyperacidity and acid gastritis. As is well known, the majority of cases of chronic gastritis are associated with subacidity, but in a fairly large group, hyperacidity is present. As in both forms the causes are the same, the difference must lie in the reaction of the individual, and can be explained by the phrase, acid gastritis is the gastritis of "vagotonikers."

Hyperacidity and hypersecretion. Much debated has been the relationship between these two, but they differ probably only in degrees and not in origin. The best standard for the presence of hypersecretion is the finding of more than 20 c.c. of strongly acid, clear fluid in the fasting stomach. The majority of cases of severe hypersecretion will be found to be associated with organic changes in the alimentary tract.

Hyperacidity and gall-stones. The association of these two conditions has now become firmly established, and as a general rule the stomach condition has been set down as a reflex from the diseased gall-bladder. Kehr, who has had a very wide experience with cholelithiasis, states that only five per cent. of individuals with gall-stones suffer from symptoms of any kind referable to them, and only one per cent. have symptoms at all typical or severe. Again, cases are recorded where, in spite of marked attacks of gall-stone colic, no stone is found at operation. Is it not probable, in some cases at any rate, that the onset of colic is a spasm produced by nervous influences, the same influences tending to produce in the stomach increased acidity and increased peristalsis?

Hyperacidity and appendicitis. One might say that appendix dyspepsia has sprung into fashion to explain the cases of indigestion not due to gall-stones. That an irritable focus in the bowel may cause a reflex spasm of the pylorus goes without saying, but in chronic appendicitis, hypoacidity is almost as frequent as the opposite condition, and normal gastric digestion more frequent than either. It must be remembered too, that mucous colitis is exceedingly common, and presents a similar picture to appendicitis.

Hyperacidity and pregnancy. Very prevalent are the symptoms of excessive acidity in pregnancy, and beyond the rather vague one of reflex irritation, a reason is difficult to provide. Pain is not so much in evidence as heartburn and waterbrash, and it has appeared to me that here we have the chemical anomaly in its purest form.

In regard to the therapy of hyperacidity, I think that too much attention has been given to the gastric mucous membrane. If it is fundamentally a nervous condition with which we have to deal, then such treatment is unnecessary and useless. Alkalis, to combat the symptoms, are indicated, as they prevent or lessen pyloric spasm, pyrosis and waterbrash. They are best exhibited in the form of a combination of magnesia and citrate of soda.

Only reasonable care is needed in the diet, too strict a dietary does more harm than good. Milk is to be recommended because of its very high acid capacity. Most of its protein and phosphates exist in combination with calcium, and when this combination is broken up by the acid of the gastric juice, the freed calcium neutralizes the acid. I have found out that 10 c.c. of ordinary milk, neutralized to phenolphthalein, will take up about 25 c.c. of 2% hydrochloric acid, before a reaction for free acid is obtained. Peptonized milk, due to its content of amino acids, has a combining power even greater than the normal milk.

The drug treatment of hyperacidity, apart from the alkalis, consists in the giving of belladonna and its derivatives, atropine and eumydrin. Their principal action is not, as was formerly thought, on the gastric glands, limiting secretion, but in the production of a sedative effect on the pneumogastric nerve.

It is when a complicating gastritis or ulceration is present that further therapeusis is advisable, and bismuth, olive oil, silver nitrate, hydrogen peroxide, and neutralon all have their uses. Neutralon is a preparation of aluminum silicate, which is broken down by the stomach acid with the formation of aluminum chloride; it not only has a powerful neutralizing effect, but is also astringent and antiseptic.

Constipation forms an important hindrance to recovery, and must be treated. For it the artificial Carlsbad salt will be found useful.

Organic changes in other parts of the abdomen will sometimes be found, more frequently, in my experience, in dispensary patients than in private practice. Surgical interference will often cause apparent cure, but unfortunately this is often only temporary. It is

a peculiar fact that a surgical operation, which seemingly has no bearing on the stomach condition, will yet remove the symptoms. This is well shown in the following case: a woman with gastric ulcer symptoms well marked (pain, tenderness, stasis, vomiting, repeated hæmorrhages) was taken to the hospital and had opened a small acute abscess in the thigh. Prior to the operation, treatment had been ineffectual, but since leaving the hospital, the symptoms of ulcer have not recurred, although nearly two years have elapsed.

In contrast to the good results sometimes achieved by the surgeons, are the cases in which adhesions follow abdominal operations, and leave the patients in much worse condition, as regards their digestion, than before.

A fairly frequent cause of hyperacidity is the presence of a small epigastric hernia and the possibility of this must always be kept in mind.

That chemical hyperacidity is not in itself of great importance, is demonstrated by the fact that even with the abatement of symptoms, the acidity usually persists. The treatment of the condition is the treatment of the underlying nervous instability, for in its simple form it is a constitutional weakness, and to the therapy of this our effort must be bent.

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THE plans for the new Jubilee Hospital at Victoria have now been passed. They include an administration building, two public wards, a laundry and a power house, and a service building.

THE PERIOSTEUM

BY W. E. GALLIE, M.B., AND D. E. ROBERTSON, M.B.

Toronto.

SINCE the time of Duhamel and John Hunter, it has been the belief of anatomists and surgeons that the periosteum is osteogenetic. The experiments upon which this belief was based appeared to be conclusive, and it is only recently that doubts have been cast upon the accuracy of the deductions.

In 1739 Duhamel reflected the periosteum from the bone of a growing animal and fitted around it a silver ring, over which he sewed the periosteum. After the lapse of a period of months he found the ring completely covered with bone, and from this observation concluded that the periosteum secreted bone. This view was not disputed until in 1912 Sir Wm. Macewen published his work, "The Growth of Bone," in which he described many experiments which seemed to demonstrate that the periosteum cannot be considered osteogenetic, and that it must be viewed merely as a limiting membrane of much the same nature as the sheath of a muscle or the capsule of one of the viscera. Since the publication of this monograph considerable controversy has arisen, but the evidence brought to support the contentions of the disputants has been largely clinical in character, and not much experimental work has been published which would be of assistance to us in formulating a definite opinion.

The experiments of which a description appears with this paper have been chosen from a series which the authors have been conducting in a general study of the regeneration of the bone. Reports of the results of these experiments will be published later. In the meantime sufficient data have been gathered to warrant the expression of an opinion.

The post-mortem specimens are here for examination, and while it will be necessary for you to accept without further proof our description of these specimens as made at the time of their recovery, it will be seen that they have been sufficiently well preserved to demonstrate most of the important points.

Experiment No. 1, May 16th, 1912. Adult fox terrier.

Operation:—Incision through skin over shaft of radius, periosteum incised and carefully reflected throughout circumference of bone, and for a space 2 in. wide. This was removed altogether and a piece of tin foil half an inch wide was wrapped about the shaft in the middle of the denuded area. The muscles were then allowed to overlie the foil, and the skin edges approximated. Healing took place by primary union. On October 19th, 1912, the specimen was recovered. No thickening had occurred. Over the foil a fibrous membrane had developed, resembling the periosteum in experiment No. 2. Beyond the edges of the foil, this membrane was continuous with a similar membrane which was closely adherent to the bone. At the edges of the area which was deprived of periosteum this fibrous membrane became continuous with the periosteum proper. Under the foil the bone was smooth and normal in appearance.

From this and similar experiments, it would appear that the injury to the bone produced by the removal of the periosteum is very slight. A new fibrous sheath immediately develops to take the place of that which has been removed, without any marked change in the subjacent bone.

Experiment No. 2, June 5th, 1912. Adult fox terrier.

An incision three inches long was made along the inner anterior border of the right fore leg. The muscles and tendons were retracted and the periosteum of the radius incised for a distance of two inches. The periosteum was then carefully raised with a smooth blunt instrument and removed without injury to the bone, over seven-eighths of the circumference of the radius. A strip of tin foil three-fourths of an inch wide was wrapped around the bone in the centre of the denuded area. Over this the periosteum was stitched with No. 0 sterile catgut, the skin edges approximated, and a dressing applied. Healing occurred by primary union. On October 19th, 1912, the specimen was recovered. No thickening whatever had occurred. The periosteum was lying as originally placed, over the tin foil, and was freely movable over it. The bone under the foil was quite smooth and normal in appearance. There had been no new bone formation over the foil.

This experiment has been repeated several times with slight variations, and always with the same results. From it one may conclude that the periosteum may be stripped from the bones of the dog without production of new bone, either by the endosteum or the periosteum. To meet the possible objection that the foil exerts an inhibitory action on the periosteum, preventing bone formation, in several experiments, as for example in experiment

13 and 6, steel plates and wax were placed under the periosteum instead of the foil. The results in these cases were the same, there being no bone formation over the foreign body.

Experiment No. 8, December 14th, 1912. Brindle bull pup, aged two months, weight 2.4 kilos.

Incision over radius as in former experiments. Periosteum split longitudinally, and reflected for a distance of one and one-half inches. A silver wire was then passed around the bone and the ends twisted together until it formed a closely fitting ring. A quarter of an inch above the ring a sheet of tin foil was wrapped around the bone. Over the wire and the foil, the periosteum was stitched with catgut and the skin closed. On April 3rd, 1913, the specimen was recovered, that is nearly four months after the operation. Weight, five kilos. The periosteum lay over the foil and wire, as at the time of the operation, no bone having been produced under the periosteum. The ring lay in a distinct groove, resulting from the thickening of the surrounding bone. When the foil was lifted, it was found that under the foil the bone had thickened exactly as much here as elsewhere.

This experiment is a modification of Duhamel's and shows the fallacy of the deductions which he drew from his results. He concluded that as he found the ring buried in bone, the new bone had been laid down by the periosteum. The above experiment shows that the correct explanation of the burying of Duhamel's ring is that the new bone grows up from the neighbouring endosteum, first forming a groove, and that ultimately the two sides of the groove meet over the ring. The fact that the shaft of the bone thickened as much under the foil as elsewhere, eliminates the periosteum as a factor in the growth of the bone.

Experiment No. 7, November 28th, 1912. Fox terrier pup, aged five months.

Incision as in former experiments. After the reflection of the periosteum, a slot was made through the shaft, holes being drilled first and these connected by means of a fine saw. This slot was then filled with warm paraffin. The wax was made flush with the surface of the bone and the periosteum stitched over it. Specimen recovered February 21st, 1913. Periosteum found lying over the wax, just as when the operation was performed. No evidence of new bone formation under the periosteum. The slot in the bone is still plugged with the wax. No change in the surrounding bone is apparent except that the edges of the slot are now rounded off and not clean cut as formerly. There is no thickening or roughening

of the bone about the slot where at the time of the operation the periosteum was raised. The slot itself is slightly smaller than it was when made and some of the wax has been extruded.

This experiment is very conclusive in showing that following injuries to the bone, such as fractures, saw cuts, drill holes, etc., the mass of new formed bone which develops about the seat of the injury comes out of the injured surface of the bone, and not from the periosteum.

Experiment No. 13, March 17th, 1913. Adult Irish terrier.

Incision as before. Periosteum reflected, and a transverse saw cut made through the radius. A steel plate was then applied, and fastened in position with nails. The periosteum was laid back on the plate and sewn up. June 10th, 1913, specimen recovered. The interesting point in the post-mortem findings in relation to this paper is that there was considerable thickening opposite the saw cut, the new bone having overlapped the edges of the plate and clamped it firmly down to the subjacent shaft. There was no evidence of new bone being laid down by the periosteum.

From the above experiments it will be seen that our findings agree with those of Macewen. We are forced to conclude that his view that the periosteum is merely a fibrous membrane without osteogenetic function, is probably the correct one. Osteogenesis appears to be solely a property of the endosteum, and appears to be as energetic in the absence as in the presence of the periosteum. Even as a source of blood supply the periosteum does not seem to be of great importance, for large areas of bone may be denuded without any apparent effect upon it.

There has been considerable discussion of late as to whether bone grafts should be transferred with the periosteum *in situ* or not. We have done many experiments with small grafts, always completely denuding the bone before making the transfer, and in no case has there been any difficulty in getting the grafts to take.

THE contagious diseases reported in Ottawa during the month of October were: tuberculosis, 6 cases; typhoid fever, 1 case; scarlet fever, 31 cases; diphtheria, 19 cases; measles, 6 cases; whooping cough, 2 cases; poliomyelitis, 1 case; mumps, 43 cases; and chicken-pox, 5 cases.

Case Reports

A CASE ILLUSTRATING DUCTLESS GLAND RELATIONSHIP

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THE interrelation existing between the ductless glands has attracted considerable attention within recent years. The present writer, in a previous communication to the *Canadian Medical Association Journal* (April, 1913), referred to this interesting subject, in reporting the autopsy findings of a case of acromegaly. Whilst our knowledge of this matter has not advanced much beyond the stage of conjecture and theory, yet it is hoped that the amount of earnest work devoted to it, at the bedside and in the laboratory, will bear results in a few years. In looking over the records of the cases of ductless gland disorders treated in the Royal Victoria Hospital, we were interested to learn that the symptoms were not in every case such as could be assigned to disturbances of only one of these structures, and that in the infrequent autopsies in such cases, pathological changes were observed in more than one of the ductless glands. Thus in the case of acromegaly referred to, the thick skin and subcutaneous tissues, covered with coarse hair were suggestive of myxedema, and the microscopic appearance of the thyroid sections showed atrophic changes in that structure. Likewise in a case of infantilism association with pituitary neoplasm, a report of which appeared in the *Archives of Internal Medicine* for May, 1913, the physical appearance of the patient led the clinicians to suspect as well a thyroid change, which suspicion was verified at autopsy. We refer to these two cases because they are fresh in our memory, and for the additional reason that they both showed at autopsy marked disturbances of the pituitary, thyroid, adrenals, and generative glands, as well as less marked changes in others of the ductless gland series.

There are, however, a large number of cases, and every practitioner of medicine will recognise the type, which, while they do not show pronounced symptoms of disturbance of any of the ductless

glands, yet are far from the enjoyment of perfect health. Thus, a female with little or no enlargement of a thyroid lobe, may become unduly nervous and irritable, particularly at puberty, during pregnancy, or at menopause, and perhaps have periods of sleeplessness, or diarrhoea, and yet have none of the other symptoms which we are inclined to associate with the disorder known as Graves's disease; or dyspnoea on the slightest exertion may develop in middle aged patients often without cough or cyanosis, the pulse becomes rapid and irregular, the tension high, the vessels sclerosed, and there is no history indicating an infection leading to valvular changes; or again the occurrence of amenorrhoea without the usual causes, and the acquirement within a short period of time of considerable adipose tissue on the part of women some years removed from the cessation of menstruation, may evoke suspicions of disturbance of the pituitary and probably of the ovary as well.

The following case illustrates excellently, both in the symptoms and the autopsy findings, one of the types of cases above referred to. Clinically the condition was looked upon as one of myocarditis, but the post-mortem findings inclined Professor Adami, who performed the autopsy, to consider the heart changes as due to disturbances of the thyroid and adrenals. Mrs. S. B., age sixty-five years, was admitted to the Royal Victoria Hospital with a normal temperature, pulse 164°, and respiration amounting to thirty-six to the minute. Her complaints were: shortness of breath, palpitation, and pain over the heart, eructations of gas, tremor of the body, weakness and sleeplessness.

For three years previous to her admission she had a fine tremor of the hands, later of the head, gradually getting worse. For the past year she had been unable to go upstairs without suffering from dyspnoea; this had become so bad that it was experienced on the slightest exertion, and made her an invalid. Three months prior to her admission, her appetite failed; and she was unable to sleep at nights. Five years ago she had symptoms akin to those of nervous prostration. She was always a hard worker. The clinical history records the removal of a uterine fibroid, but no trace of any operation scar was found at autopsy. There was hypertrophy of the right lobe of the thyroid, the time of onset of which was not certain, as her attention had never been directed to it; there was no exophthalmos. Her intelligence was good; occasionally she had dizzy attacks; was very nervous. Her skin was quite clear and her lips red. She had no cough nor cyanosis, but she had marked dyspnoea. There was good expansion of the chest; there were no

abnormal areas of dullness, but a few *rales* were heard at the bases of the lungs. She had a marked kyphosis; and œdema of the feet and legs was quite evident. Her pulse was 164, irregular and of high tension; vessels were somewhat sclerosed. The apex beat was 12 cm. from the mid-sternal line. There were murmurs heard at the apex and over the tricuspid area. She remained in the hospital six weeks, and during that time improved considerably, although her pulse rate only got below 100 on one or two occasions.

She returned to the hospital in about two months, in a much worse condition than on her first admission; her pulse could hardly be counted at the wrist, but the trembling which was so apparent during her first visit had disappeared, only appearing when she was excited. She had less nervousness though more weakness; no cyanosis; no cough, but marked dyspnoea. The œdema, however, was more marked, involving the legs and abdominal wall, and she also had dullness at the base of the lungs. She died following a severe localized infection of the left leg which developed two weeks after multiple punctures had been made to relieve the œdema.

There was found at autopsy in the gaunt, withered body: a dilatation of the heart chambers without hypertrophy; some atrophy of the heart muscle but no fibrosis; slight thickening of the mitral valve; there was no consolidation of the lungs but a terminal œdema was present, as well as marked hydrothorax; the liver was passively congested and showed fatty infiltration and some degeneration; the kidneys showed a chronic interstitial change but no contraction; the spleen was dry and firm and contained comparatively little pulp; the intestinal tract was greatly reddened throughout, particularly the small bowel, which contained a few submucous hæmorrhages; the pelvic lymphatic glands, as well as a chain along the abdominal aorta, were enlarged and reddened; the *pancreas* weighed only 70 grams and was small, firm and pale, and microscopically showed fibrosis; the *thyroid* was twice the normal size, the right lobe measuring 10 x 5 x 4.5 cm., and the left lobe 7.5 x 5 x 3.5. The isthmus was represented by a thin band of tissue. Externally the organ had a bulbous appearance, the right lobe being partially divided into two smaller lobes by a deep notch at one pole. When the right lobe was cut into, it presented a rather unusual appearance, the central portion being occupied by a small irregular calcareous nodule; and in the immediate vicinity of this was a rounded, encapsulated portion which occupied over one-third of the entire lobe and had undergone a fibro-hyaline degeneration. This fibro-hyaline tissue was seen in thin strands throughout

the entire organ and enclosed rounded adeno-colloid portions of thyroid. One can hardly escape the conviction that the fibro-hyaline centre represented the original thyroid tissue, whilst the adeno-colloid collections at either pole represented more recent additions. The left lobe had not the same fibrous appearance but appeared to be much more normal. Microscopically there was great replacement of thyroid by fibro-hyaline tissue with here and there areas of free blood cells. The normal thyroid tissue consisted of acini of varying sizes whose lining cells were not flattened and whose nuclei were pale. Stainable colloid not abundant was present, it had embedded in it some *débris* and a few epithelial cells. The adrenals were both quite large, the left being the larger, and measured 7 x 1.5 cm. The cortex was moderately pale and a little thinner than normal. There was a remarkably large amount of dark coloured medulla which formed the main mass of the organ. The right adrenal showed the same characteristics. The microscopic sections showed a thickened capsule; an hypertrophy of the cortical layers; and well marked chromaphil cells in the medullary portion. The ovaries were atrophied and fibrosed; and the uterus had a number of fibroids, some being situated just beneath the mucosa, whilst others occurred in the muscular coats; a few had undergone calcareous degeneration.

Comments: This case is not presented in the expectation of throwing much light on the problem of ductless gland disorders, but it is offered as an example of unusual clinical manifestations which were considered at autopsy as due to pathological changes, principally in the thyroid and adrenals. Had all the usual symptoms which are commonly associated with the condition called hyperthyroidism been present, the case would not have been as noticeable as when only some of these were present. The adrenal hypertrophy is of much interest and leads one to wonder at the enlargement of the medulla of the organ; and to question whether some of the symptoms present in this case were not modified or caused by this abnormality. A plausible but unverifiable interpretation of the events is that some time after the menopause, when the ovarian secretion became diminished or changed, the relationship between the ovary and the thyroid asserted itself, and the latter organ acquired a hypersecretion and hypertrophied. This is only one of quite a few theoretical explanations which might be offered, all of which are based on the clinical observations of thyroid relationship with the ovary. As to why this should have occurred in this instance and not in the case of every woman who passes the

menopause it is impossible to state. There is the possibility that some reflex supplied by the fibro-calcareous changes in the uterus, may have induced this unusual occurrence. The problem is all the more perplexing if one remembers the hyperplastic condition of the medullary portion of the adrenal, present in this case, as well as the atrophic condition of the pancreas.

Clinically considered, this patient had all the usual symptoms associated with exophthalmic goitre, except the exophthalmos. The increased pulse rate, irregularity of the heart action, the nervousness and the tremor are all characteristic of Graves' disease and the condition existed for some years, long enough to bring about the dilatation of the heart chambers, and all the secondary changes consequent upon a poorly working organ. Whilst at autopsy extensive areas were found in the thyroid indicating an atrophic state, following upon former activity, yet sufficient tissue was present highly suggestive of the changes noted in sections of the exophthalmic thyroid.

It is difficult, however, to assign to the enlarged adrenals their share in the production of symptoms; for the simple reason that little as we know about the thyroid, we know still less about the adrenals. It is true we know something about the medullary portion of the adrenal; the well-known suprarenal extract, or to give it its commercial name, adrenalin, being formed from the chromophil cells of the medulla. The action of this secretion on the blood pressure particularly on the splanchnic area, and its styptic action when locally applied, are well recognized; but about the cortex of the organ practically nothing is known. In disorders of the ductless glands the adrenals are frequently affected. Their undue enlargement has been noted in cases of acromegaly and exophthalmic goitre, and their relation to the sexual glands is well known but not well understood. Thus in cases where precocious development of the generative organs was a marked feature, great enlargement of the adrenals was present. It is probable that in the case above outlined, the secretion from the enlarged adrenals increased the blood pressure and possibly affected the circulatory system in ways that we know not of. The marked artero-sclerosis was possibly due to an increased adrenal secretion, affecting the blood pressure.

To some readers it may seem that this report is incomplete unless an attempt is made to trace every sign and symptom to its source in the abnormal post-mortem findings. This is obviously impossible by reason of the fact that we do not know enough about

the secretions of organs like the thyroid adrenal and ovary to trace their effects upon other organs; therapeutically extracts of these organs are employed in a somewhat empirical way. From the experience which the profession has gained in observing and recording cases somewhat akin to ours we have attempted to sketch the general effects on the body from abnormal secretions of the thyroid and adrenals; but as already intimated, the case is recorded, not with the object of noting the numerous theories respecting the functions of these structures, but rather as an example of their undoubted pathological change, accompanied by a brief account of what occurred during life from this change. Possibly the case may serve as a fair example of a class of patients who, whilst they do not present all the well-known signs associated with the condition called Graves' disease, yet seek the physician's advice for the relief of symptoms which are not easy to relieve and are difficult to properly assign.

THE following candidates have passed the final examinations of the College of Physicians and Surgeons of Ontario:—William MacDonald Adams, Toronto; Harold Bell, Collingwood; Wilfred Andrew Thomas Bodkin, London; William Alfred Costain, Brantford; Lawrence Edmond Crowley, Kingston; Arthur Des Rosiers, Rockland; Charles Francis Dunfield, Petrolea; William David Ferguson, Hamilton; Anthony James Flood, Delta; Grattan Clifford Graham, Fenelon Falls; Richard Alfred Ireland, Trenton; David Campbell Irwin, Ottawa; Warren Frederick Lockett, Kingston; Herbert Kent Manning, Toronto; George Robert Miller, Owen Sound;—Finlay Munroe, Maxville; Archibald McCausland, St. Thomas; Claude Andrew McClenahan, Milton; Wyatt Lorne McIlwraith, Woodstock; James Franklin McLay, Woodstock; Charles Ernest McLean, Athens; Edmund Morell Alexander Oldham, Chatsworth; William Albert Scott, Langham, Sask.; Charles Edward A. Trow, Toronto; Donald Alexander Warren, Hamilton; Fred Earlby Webb, Aurora; Arnold Lorne Wellman, Harold; Louis Edwin Williams, St. Thomas.

Editorial

THE COLLEGE OF SURGEONS

TWO years ago a bulletin was published quietly by the Carnegie Foundation. It was nothing more than a report of observations which an official had made of medical education in various countries. The work was done hastily and, in many cases, carelessly; but in the main the judgements of medical schools were accepted as correct. The report had the effect of a decree. In the United States thirty-nine medical schools have closed their doors, and many others which incurred censure undertook improvements. In Canada the effect was instantaneous. Two schools were reorganized; one was greatly improved; and all have profited by the frank criticisms which they received.

The practice of surgery in America is now up for fresh consideration. It is declared to be unsatisfactory, and a remedy has been devised. The remedy is a college of surgeons, to which none shall be admitted except those who are competent. The method is simple. Its efficacy will depend upon the wisdom with which it is applied. So long as the college is hortatory it will succeed. So soon as it attempts to become mandatory it will fail. Its value will depend upon the character of the surgeons who compose it. It will depend also upon the character of the surgeons who do not compose it. At the moment it is more important to the college that it should include all good surgeons than it is to the good surgeon that he should be included. Therefore, no good surgeon need fear that he will not be invited to join. The undertaking is an elaborate one, and it requires good sense and good feeling on the part of the organizers as well as sympathy and patience on the part of the profession at large.

If both parties continue to be guided by the profound principle of medical ethics, that the profession exists for the public good, the college will become a reality. If a considerable part of the profession approach the problem in the spirit of Demetrius, who feared that his craft was in danger, the college must fail, since much grave suspicion, profound prejudice, and even weighty reason can be adduced against it by those who are resolute to find fault.

The organizers have proceeded with delicacy and tact; although in the desire to please there is danger of becoming disingenuous and employing devices which defeat their purpose by their transparency. The very name presented a difficulty. In the "authentic statement" which was sent out on May 15th, the name of the corporation was given as the "College of Surgeons." In the "short statement" of October 1st, the title has grown by imperceptible stages to the "American College of Surgeons." The earlier term, by a remarkable stroke of delicacy, was probably intended to meet the susceptibilities of Canadians, who might be disposed to resent the implication that they lived on the American continent. The charge was inevitable, as there are other colleges in the world whose existence cannot be overlooked. Again, in the statement of October 23rd, much is made of the "absolutely democratic origin" of the college; and we are instructed that the mark of a democratic body is that it is "open," and not "selective." The committee protests too much. If the college is not a selected body, it has no reason for existence.

The truth is that the selection was carefully made. The committee selected three persons in various localities to select those who might be invited to become founders of the college. By a further process of selection, a list of Fellows was finally evolved and published on November 13th. If this were the end, the assumption of the new college that its members alone were qualified to perform surgical operations, would be monstrous. But it is not the end, and new names are being brought forward daily. The design is correct; but patience on the

part of the profession and wisdom on the part of the college are required.

Let us consider the Canadian list. From Alberta there are only three names. From Manitoba there is only one outside of Winnipeg. In the whole of Ontario, outside of Toronto, there are only three. From the province of Quebec, outside of Montreal, there is not a single one, and not a French surgeon from the whole province. Nova Scotia supplies only one, and Prince Edward Island none at all. The first business of the college is to establish itself; the next is to make sure that its foundations are sufficiently wide. If it proceeds towards those ends which were recited in the "call of the meeting" before it has remedied the deficiencies in its membership, it will meet with the hostility of the whole profession apart from those members who have elected themselves Fellows.

It is a little too early for this new college to talk of "formulating the minimum standard of requirements which should be possessed by any authorized graduate in medicine," before he shall be allowed to continue to practise that profession which he is already authorized by law to practise. If it "seeks the means of legalizing a distinct degree supplementing the medical degree," before a graduate in medicine shall be authorized to practise surgery, the universities will have something to say, especially those which, like McGill, already confer a degree in surgery.

There is much inefficient surgery in the country districts, but it is the best that can be done under the circumstances, and it is better than none at all. If a physician in the country is to be formally debarred from meeting every emergency which arises, many a sufferer will go unrelieved. It is not by creating a new college that a distinction will be made "between the men who have been authorized to practise surgery, and those who have not." That distinction has already been drawn by the various laws which govern the practise of medicine. It remains for the universities and the licensing bodies to see to it that all practitioners are fully qualified.

The most the American College of Surgeons can do for the present is to keep a roster and be especially guarded in its expression of opinion upon the capacity of physicians whose names do not happen to be upon it.

By its existence alone the college will do much to educate the people to distinguish between competent and incompetent surgical specialists. In the slow progress of time it may, if it is wisely governed, gain the authority of custom and consent. It marks that natural separation between medicine and surgery, which always comes at a certain point in the civilization of a community; but a man does not automatically become a surgeon by ceasing to practise medicine.

MEDICAL INSPECTION OF SCHOOLS

THE second annual report on the medical inspection of public schools in the province of British Columbia contains the results of an inspection continued throughout the school year, from September 1st, 1912, to June 30th, 1913. Provision was made by an Order in Council, dated September 18th, 1912, by which medical inspectors in the unorganized districts were to be paid by the provincial board of health at the rate of fifty cents for each pupil examined, and travelling expenses to the school at the rate of fifty cents per mile. A regular annual inspection was to be made and paid for at the same rate. This allowance has not been considered sufficient by some of the inspectors and one doctor at least has refused to act, the contention being that the distance to *and from* the school should be paid for at the same rate. Appointments are made for the year only, so that it is necessary each year to re-appoint all the inspectors. This, it is thought, will secure more efficient work. A guide for the use of teachers and medical inspectors of rural and assisted schools has been compiled and a pamphlet containing instructions regarding the care of the teeth has been given to each child. School nurses have been appointed to assist the medical inspectors

in New Westminster, South Vancouver, Vancouver, and Victoria, and the appointment of a nurse to assist in the inspection of rural schools is under consideration.

The number of children examined was 37,591. Of these 16,744 had never been vaccinated; 835 were suffering from malnutrition; 1,509 had adenoids; 5,302 had enlarged tonsils; 1,676 were found to have defective sight, and 580 had defective hearing. One hundred and eight cases of scabies were discovered, 86 of ringworm, 114 of impetigo, and in 316 cases vermin were present. It is encouraging to note that the parents, almost without exception, give every assistance and that any objection to the medical examination, which at first may have been apparent, seems to have been overcome. The report contains a plea for the establishment of more open-air classes and refers to the fact that it has been stated that twenty per cent. of school children, upon careful examination, reveal some sign of tuberculosis.

INTESTINAL STASIS

ON his return from Chicago where he was a conspicuous figure in the surgical congress held in that city, Sir Arbuthnot Lane visited Toronto, spent a couple of days at Government House, and came to Montreal. In Montreal he gave two clinics, one in the Royal Victoria Hospital and the other in the Montreal General Hospital. The subject in each instance was intestinal stasis.

Whatever opinions one may hold regarding the delayed passage of intestinal contents, one must admit that the question is most ably put forward by Sir Arbuthnot Lane. As a speaker he is most clear and interesting, and an unusually able advocate of his subject. His views are well defined, clear-cut, and by most people would be considered somewhat extreme, but Sir Arbuthnot has the faculty of making the most radical statements in such a mild voice and in such a gentlemanly way that they lose any sting that might appear if put forward in a

less agreeable manner. By his persistent advocacy and reiteration of his views on every available occasion, in season and out of season, Sir Arbuthnot Lane has certainly got the medical profession on two continents thinking, and thinking hard, regarding auto-infection from the intestinal canal.

Many think that he has grappled with a large physiological problem, that he is dealing with a condition of things in part brought about by modern methods of living and changed conditions of diet. There is at the present time a larger consumption of meat than formerly, and the modern process of milling gives us flour from which all the irritating particles of the husk have been eliminated and which can be but little if at all stimulating to the mucous lining of the gastrointestinal tract. Then again, our upright position and strenuous life tells on the weaker individuals of the community and causes a relaxation of the muscles, and particularly of the abdominal muscles, which play such an important part in holding the abdominal viscera in position. Ptosis is common, and it may be that we shall find surgical methods applicable to a certain number of these cases.

Sir Arbuthnot Lane has had results in a wide range of cases which are most suggestive and, one might even say, startling. This much may be said with some assurance, that the attention of the medical and surgical world is now so keenly directed to this subject that in the comparatively near future it will be worked out and suitable surgical procedures adapted to certain pathological conditions.

OTTAWA AND TYPHOID

THE capital of the Dominion has acquired unenviable notoriety as a result of a serious outbreak of typhoid fever. More unfortunate is it when we are aware that typhoid is a preventable disease and there is no reason why the outbreaks in question should not have been avoided. Eternal vigilance is the price of safety. In no instance is this more

apparent than in the case of Ottawa. Ottawa is beautifully situated on a great river which, from its immense size and the exceedingly large flow of water, was known to the pioneers as the "Grand River." As the city became more populous, an endeavour was made to secure a modern supply of water under pressure for domestic uses and fire protection, and the simplest method was to install water wheels and pumps and force this very soft water to all parts of the city. At the outset the water was taken through a wooden pipe laid beneath the waters of the aqueduct which supplied the water power for the working of the pumps. In the course of time this clear water pipe became pervious, and eventually the openings were so large that, in addition to the water along its course, sewage pouring into the aqueduct also gained access. The usual outbreak of typhoid occurred, explosive in its character, as may be expected when sewage is introduced into the drinking water of a susceptible people. This was in 1887. Immediately steps were taken to improve the system, with the result that a steel intake pipe was laid, extending beneath the waters of the aqueduct and river for upwards of a mile. Everything was satisfactory until the growth of the city demanded a new intake pipe to supply the people and a new aqueduct to supply the additional water wheels required to pump the water. During the course of this new work sewers were intercepted. To care for the sewers cut in this process the easiest method was followed, namely, pumping the effluents from the sewers cut in the new aqueduct into the old aqueduct, which carried at its bottom the clear water pipe supplying the city with water. The waterworks system being worked to its maximum capacity did not furnish sufficient water in emergencies such as those occasioned by fires, and a valve in the aqueduct near the pumping-house was opened to supply the deficiency. The sewage-laden water thus gained access to the city mains. Again there was an outbreak of alarming proportions, the people were tardily warned to boil the water and the modern hypochloride method was used to neutralize the sewage. The outbreak

subsided, the people were very chary of the water and the marble slabs in the silent graveyard tell their tale.

In the meantime the new aqueduct and intake pipe were completed, some portions of the new clear water pipe were constructed of cement during a severe winter season with insufficient protection, resulting in defective workmanship, and eighteen months later, or in the spring of 1912, the new aqueduct and new intake pipe were ready to supply water to the city mains. It seems that the previous warnings had fallen on deaf ears, for there was another outbreak resulting from a mixture of water and sewage which the hypochloride could not neutralize, and the supplying of this as a beverage to thousands of human beings.

An investigation was conducted under the Honourable Mr. Justice Gunn, the result being that it was conclusively proved that the last outbreak was due to the leaks in a cement portion of the intake pipe lying within the aqueduct. It developed at the investigation that a sewer intercepted in the construction of the new aqueduct was carried along immediately over the intake pipe for a considerable distance, and, moreover, was leaking; that the top of the cement portion of the intake pipe developed a crack on its upper surface; and that with the pumps working there was a suction causing water to flow from the aqueduct into the intake pipe. The outcome of the investigation was that the services of the city engineer and the Medical Health officer were dispensed with.

The city of Hull situated on the opposite shore of the river has a system of water supply with its intake pipe in the river, yet there has been no visitation of water-borne epidemics, excepting one which was the direct result of a defective concrete intake pipe. Since the pipe has been made impervious no further trouble has been experienced. This does not prove that the river water is absolutely without danger at all times and that it will continue to be so for all time to come. It does indicate, however, that the water of the river was not responsible for the outbreaks from which Ottawa and Hull

suffered, but that they were due in every instance to negligence on the part of those charged with the proper safeguarding of the water supply.

TYPHOID FEVER AT HALIFAX

HALIFAX has been comparatively free from typhoid fever for several years, an exemption attributed to a plentiful supply of good drinking water but little exposed to risks of pollution. The present epidemic aroused considerable interest in professional circles and led to the appointment of a committee by the Halifax Medical Society to investigate its possible causes. The committee submitted a preliminary report at a regular meeting held on December 10th, from which we glean the following data:

A few cases were observed in August and September; eighty cases were notified in October, fifty in November. The incidence of the disease lessened greatly in November, and in December thus far only five new cases have occurred. The disease has been of average severity. There have been sixteen deaths, a mortality rate of 12.3 per cent. A number of the cases were admitted to the Victoria General Hospital, but in October, as no more patients could be received there, it became necessary to open an emergency hospital with accommodation for fifty beds.

Before discussing the causation of the outbreak, it is necessary to refer to some features of the water supply and the geographical distribution of the cases. The water supply of Halifax is obtained by gravitation from a group of lakes some distance from the city. The water is excellent in quality and abundant in quantity. The watersheds are small, and largely free from risks of pollution by human sources. The water of the lakes is distributed by two mains, one supplying the low-lying sections of the city, the other the higher areas. These are known locally as the "low" and "high" services. The high service supply is free from risks of pollution, but the

low service supply is menaced at several points, actual and potential. The sources of danger have been recognized by the authorities for many years but, strange to say, nothing has been done to improve the situation. It was hoped that the excellent report prepared by Professor Starky two years ago on the water system would have stimulated improvements, but nothing was done. In respect to geographical distribution of cases, the disease was confined chiefly to the northern section of the city, only 15 per cent. occurring in the south end, supplied by water from the same sources.

The discussion which followed the submission of the report disclosed differences of opinion in regard to the cause of the epidemic. All agreed that milk and other food supplies were not responsible. Some thought that the outbreak was due to "fly and contact infections," basing their views on the peculiar limitation of the disease. Others thought from the explosive feature of the outbreak that further investigation and more careful study would show that water infection played a decided part. We await with interest the further results of investigation.

MANITOBA MEDICAL COLLEGE

SOME mention has been made already in this JOURNAL of the work of the medical schools, but so far nothing has been said about the Manitoba College at Winnipeg. Yet, although the last to be mentioned it is by no means least of Canada's medical centres, for it is now holding its thirty-first session with sixty-one freshmen and a total enrolment of one hundred and ninety-one students. These figures indicate the vigour of its growth, and they are the largest yet registered. The college has been extended recently and its original capacity doubled. The new building provides laboratories for practical pathology and practical bacteriology, an enlarged pathological museum, a pathological workroom, and two extra lecture rooms; the dissecting room has also been enlarged.

The faculty has been increased by the addition of the following members, Dr. O. S. Waugh and Dr. George Stephens have been appointed demonstrators in pathology, Dr. F. C. Bell demonstrator in bacteriology, and Dr. D. E. McKenty demonstrator in histology. Dr. Evatt, who was professor of anatomy at the Manitoba College, has received the appointment formerly held in Dublin by Dr. Geddes, professor of anatomy at McGill University, and arrangements have been made with Dr. Alexander Gibson, former demonstrator of anatomy in the University of Edinburgh, to take charge of the anatomical department.

IN an editorial on the Medical Schools, which appeared in the November issue of the *Journal*, it was stated that Dr. John Stewart had been appointed professor of surgery at Dalhousie University in succession to Dr. N. E. Mackay. This was not quite correct. The new professor of surgery is Dr. E. V. Hogan. Dr. Stewart, however, is giving a few lectures this winter in order to relieve the pressure which is necessarily involved in the readjustment of the new and happy relations between the university and the hospital.

IN Bulletin No. 267 of the Laboratory of the Inland Revenue Department at Ottawa, information is found concerning the examination of 167 samples of seidlitz powders. Of these 82 were found to conform to requirements. However, an unexpected degree of carelessness was evident in their manufacture, for 73 of the samples examined were found to be adulterated and 12 samples showed great carelessness in weighing. The term "adulterated" was employed when the contents of either the blue or the white package deviated by more than 10 grains, either more or less, from the amount specified in the pharmacopœia—for the blue paper 120 grains of sodium potassium tartrate and 40 grains of sodium bicarbonate; for the white paper, 38 grains of tartaric acid.

At first sight perhaps plumbing and medicine seem to have little in common, but substitute the words "public health" for "medicine" and a connexion is at once established. On a recent occasion, speaking at the Royal Technical College, Glasgow, Mr. W. D. Caroe, Master of the Worshipful Company of Plumbers, made the suggestion that more efficient work might be done if all plumbers were registered, particularly if each man were to mark his work with his registered number. Or, he suggested, each registered plumber might wear a badge as a proof of his efficiency. As the *Lancet* observes, the suggestion has practical force.

A CHARGE of malpractice was made recently against Dr. B. R. Mooney, of Macleod, Alberta. The plaintiff alleged negligence and want of skill in performing an operation for appendicitis; he stated that, although he was on the operating table for four hours, defendant failed to find or to remove the appendix. He alleged also that muscles were cut out during the operation. Special damages amounting to \$919.50 and general damages of \$5,000 for suffering and permanent injury to health were claimed. The defence was a complete denial of the allegations, and it was stated that the inability to discover the appendix was due to the large number of adhesions which were encountered. A counter claim for \$300 for medical attendance was made. Judgment was given for plaintiff for \$780 special damages, no general damages being allowed. The defendant was awarded \$135 on his counter claim. We are informed that Dr. Mooney is appealing against the decision.

A ROYAL COMMISSION, with Lord Sydenham as chairman, has been appointed to enquire into the prevalence of venereal diseases in the United Kingdom, their effects upon the health of the community, and the means by which those effects can be alleviated or prevented, it being understood that no

return to the policy or provisions of the Contagious Diseases Acts of 1864, 1866, or 1869, is to be regarded as falling within the scope of the enquiry." The members of the commission are: Right Hon. Sir David Brynmor Jones, K.C., M.P., Sir Kenelm E. Digby, Sir Almeric Fitzroy, Sir Malcolm Morris, Sir John Collie, Mr. James Ernest Lane, Dr. Arthur News-holme, Canon J. W. Horsley, Rev. J. Scott Lidgett, Dr. F. W. Mott, Mr. Philip Snowden, Mrs. Scharlieb, M.D., Mrs. Creighton, and Mrs. Burgwin.

A PENSION on the Civil Service list of £50 has been granted by Premier Asquith to the widow of the late Nathaniel Alcock, professor of physiology at McGill University. At Dr. Alcock's death, his family was left quite unprovided for, and a memorial fund was established to provide the means to educate his four children, of whom the eldest is but seven years of age. Already Dr. Alcock's friends in England have subscribed over ten thousand dollars for this purpose; and following is a list of the Canadian contributors:

Dr. A. W. Malloch (Hamilton, Ontario), \$50; Dr. J. G. Adami, \$50; Dr. George E. Armstrong, \$50; Dr. F. J. Shepherd, \$25; Prof. Willey, \$25; Dr. A. T. Bazin, \$25; Dr. Birkett, \$25; Dr. Blackader, \$20; Dr. Macphail, \$10; Dr. W. Peterson, \$10; Dr. W. F. Hamilton, \$10; Dr. J. McCrae, \$10; Dr. R. H. M. Hardisty, \$10; Dr. J. Alexander Hutchison, \$10; Dr. E. Archibald, \$10; Dr. F. R. Miller, \$10; Dr. Maude E. Abbott, \$5; Dr. MacCordick, \$5; total, \$360.

THE eleventh International Conference on Tuberculosis opened in Berlin on October 22nd. In the absence of M. Bourgeois, of Paris, the president of the International Anti-tuberculosis Association, the chair was taken by Dr. Bumm, chief of the Imperial Bureau of Public Health, Berlin. The inaugural address was delivered by Dr. Delbrück, secretary of state. In it he spoke of the progress which has been made during the past fifteen years towards diminishing the death

rate from tuberculosis—the mortality has decreased by one-third in England, France, Germany, Belgium, and the United States, and one-fifth in Austria, Switzerland, and the Netherlands. The three principal discussions of the conference were on the pathogenesis of tuberculosis, the surgical treatment of pulmonary tuberculosis, and national insurance and tuberculosis. Dr. Shennan, of Edinburgh, contributed a paper to the discussion on tuberculosis and man; he stated that in Scotland the death rate for the disease was highest between the ages of twenty-five and thirty-five, whereas in England the period of greatest mortality was from thirty-five to forty-five. Dr. Hamel, of Berlin, stated that in Germany one-fourteenth of the adult mortality from this disease was due to tuberculosis of organs other than the lungs, and of the deaths under fifteen years of age this was true of one-half of these resulting from tuberculosis. In England, Scotland, Sweden, and Norway, this percentage rises to four-fifths. Professor Petruschky, of Danzig, compared the typical course of chronic tuberculosis with that of syphilis and referred to the fact that glandular disease frequently precedes active tuberculosis. Dr. Mack, of Hamburg, announced the departure of an expedition for Jerusalem to study tuberculosis in the Arab and in the European. It is hoped that valuable information will result.

An excellent paper on the surgical treatment of pulmonary tuberculosis was given by Dr. Brauer, of Hamburg. He briefly discussed resection of portions of the lung and the surgical opening of large tuberculous cavities, and then turned to the treatment of pulmonary tuberculosis by artificially induced collapse of the lung. He recommended the extensive extrapleural operation. The "pillar resection" he did not advise, save in exceptional cases, as it is often followed by an aspiration pneumonia of the lower lobe.

In the third discussion, much interesting information was given by Dr. Kaufmann and others concerning the measures taken to prevent the disease.

Book Reviews

DISEASES OF THE STOMACH, INCLUDING DIETETIC AND MEDICINAL TREATMENT. BY GEORGE ROE LOCKWOOD, M.D. Illustrated. Philadelphia and New York: Lea & Febiger, 1913.

A fresh book by a new author upon diseases of the stomach is always welcome. Dr. Lockwood is professor of clinical medicine in Columbia University, and attending physician to Bellevue Hospital, and he has described these diseases "as he happened to see them," from the standpoint of personal experience. Series of cases have been grouped and analyzed, and the results noted. When these results are at variance with the accepted teaching, the fact is noted, and in many cases they are strange and unexpected. The book, then, reflects a careful study of disease from hospital and private case records and from authentic histories from other hands. All will agree that it is a very complete presentation of diseases of the stomach, useful to the general physician and interesting to the specialist who is always glad to find fresh views, especially if they are based, as they are in the present case, upon a large practice and wide observation. One turns instantly to the section which deals with radiography, and finds that Dr. Lockwood has taken full notice of "the radical differences of opinion between some of the leading radiologists as to the limitations, or lack of limitations, of their special art." He is not carried away by any apparent advantage which a machine enjoys over human intelligence in making a diagnosis of the obscure conditions which are found in the diseased stomach. There is small danger that a book of the importance of this one will be overlooked, especially at a time when the subject with which it deals is under scrutiny by the profession.

HYGIENE AND PUBLIC HEALTH. BY LOUIS C. PARKES, M.D., D.P.H., and HENRY R. KENWOOD, M.B., F.R.S. (Edin.), D.P.H. (Lond.). Fifth edition; illustrated. Price, 12s. 6d. net. London: H. K. Lewis, 1913.

Parkes and Kenwood still remain the exponents of the best practice in hygiene and public health. An examination of the five editions of their book would disclose the record of the progress

which has been made in this division of science in the past fifteen years. The present edition bears the date of September 13th, 1913, and contains well considered opinions upon all matters pertaining to hygiene and public health. The book is an established standard for students, and all official persons who have to do with these subjects.

DORLAND'S AMERICAN ILLUSTRATED MEDICAL DICTIONARY, with new and elaborate tables. Seventh revised edition. Edited by W. A. NEWMAN DORLAND, M.D. Large octavo of 1107 pages, with 331 illustrations, 119 in colours. Containing over 5,000 more terms than the previous edition. Philadelphia and London: W. B. Saunders Company, 1913. Flexible leather, \$4.50 net; thumb indexed, \$5.00 net. Canadian agents: J. B. Hartz Company, Limited, Toronto.

The present writer has used this dictionary, in its various editions, for the past thirteen years, and has always found that it met every reasonable demand which was made upon it. The test of a book is experience; and seven editions in thirteen years is proof that the experience of the present writer is not singular.

THE SURGERY OF THE STOMACH. A HANDBOOK OF DIAGNOSIS AND TREATMENT. BY H. J. PATERSON, M.A., M.C., M.B. (Cantab.), F.R.C.S. (Lond.). Illustrated with plates. Price, \$3.50 net. Toronto: The Macmillan Company of Canada, Limited, 1913.

This book has arisen out of an essay by the author, which won the Jacksonian prize awarded in 1904 by the Royal College of Surgeons. It gives an extended account of the diagnosis and treatment of those affections of the stomach which are amenable to direct surgical interference. One reads with some surprise that in England for diagnosis of diseases of the stomach, "chemical methods are so rarely made use of in practice and dealt with so briefly in textbooks." In this country such methods are a matter of routine. Full stress is laid upon the prevalence of gastric cancer and the necessity of an early diagnosis. In less than five per cent. of the cases which are referred to the author for surgical treatment is a radical operation possible. His experience is not singular, and all operators will agree that "the saddest and most discouraging part of the work of a surgeon is the frequency with which he sees patients suffering from cancer so advanced that the time for a radical operation has

gone forever." It might be expected that an author who was so much concerned about early diagnosis should have made some mention of radiography in connexion with the bismuth test-meal. The list of references appear to have been compiled by the female assistants to whom the author gives such unstinted praise. The list is quite formal, imperfect, and indiscriminating.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in Medicine and Surgery. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., and CHARLES L. MIX, A.M., M.D. Vol. I, GENERAL MEDICINE, edited by F. BILLINGS, M.D., and J. H. SALISBURY, M.D. Vol. II, GENERAL SURGERY, edited by J. B. MURPHY, M.D., LL.D. Vol. III, THE EYE, EAR, NOSE AND THROAT, edited by CASEY A. WOOD, M.D., D.C.L., ALBERT H. ANDREWS, M.D., and GUSTAVUS P. HEAD, M.D. Vol. IV, GYNECOLOGY, edited by E. C. DUDLEY, M.D., and H. M. STOWE, M.D. Vol. V, PEDIATRICS, edited by ISAAC A. ABT, M.D.; ORTHOPEDIC SURGERY, edited by JOHN RIDLON, M.D., with the collaboration of C. A. PARKER, M.D. Vol. VI, GENERAL MEDICINE, edited by F. BILLINGS, M.S., M.D., and J. H. SALISBURY, A.M., M.D. Vol. VII, OBSTETRICS, edited by J. B. DE LEE, M.D., with the collaboration of H. M. STOWE, M.D. Price of the series of ten volumes, \$10.00 Single volume, Vol. I, \$1.50; Vol. II, \$2.00; Vol. III, \$1.50; Vol. IV, \$1.35; Vol. V, \$1.35; Vol. VI, \$1.50; Vol. VII, \$1.35. Chicago: The Year Book Publishers, 1913.

THE PRACTITIONER'S VISITING LIST FOR 1914. Price, postpaid, \$1.25. Thumb-letter index, 25 cents extra. Philadelphia and New York: Lea & Febiger.

ACUTE ABDOMINAL DISEASES INCLUDING ABDOMINAL INJURIES AND THE COMPLICATIONS OF EXTERNAL HERNIA. By J. E. ADAMS M.B., M.S. Lond., F.R.C.S., Eng., and M. A. CASSIDY, M.A., M.D., B.C. Cantab., F.R.C.P. Lond. Toronto: The J. F. Hartz Company, Limited, 1913.

DISEASES AND DEFORMITIES OF THE FOOT. By JOHN JOSEPH NUTT, B.L., M.D. Illustrated. Price, \$2.75. New York: E. B. Treat & Company, 1913.

THE PRESCRIBER, November, 1913. Special number dealing solely with tuberculin therapy. May be obtained from Mr. Paul B. Hoeber, 69 East Fifty-ninth Street, New York.

A SYNOPSIS OF MIDWIFERY. By ALECK W. BOURNE, B.A., M.B., B.C. (Cantab.), F.R.C.S. (Eng.) Bristol: John Wright & Sons, Limited, 1913.

MEDICAL AND SANITARY INSPECTION OF SCHOOLS FOR THE HEALTH OFFICER, THE PHYSICIAN, THE NURSE, AND THE TEACHER. By S. W. NEWMAYER, A.B., M.D. Illustrated. Price, cloth, \$2.50 net. Philadelphia and New York: Lea & Febiger, 1913.

MENINGOCOCCUS MENINGITIS. By HENRY HEIMAN, M.D., and SAMUEL FELDSTEIN, M.D., with an introduction by HENRY KOPLIK, M.D. Illustrated. Philadelphia, London and Montreal: J. B. Lippincott Company, 1913.

INTERNATIONAL CLINICS, Vol. IV, Twenty-third Series, 1913. Edited by H. W. CATTELL, A.M., M.D., and others. Philadelphia and London: J. N. Lippincott Company.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, Vol. VII, No. 1, November, 1913. Price, 7s. 6d. net. London, New York, Calcutta, and Bombay: Longmans, Green & Company.

CAUSES AND CURES OF CRIME. By THOMAS SPEED MOSBY. Illustrated. Price, \$2.00. St. Louis: The C. V. Mosby Company, 1913.

PYORRHEA ALVEOLARIS. By FRIEDRICH HECKER, B.Sc., D.D.S., A.M., M.D. Illustrated. Price, \$2.00. St. Louis: The C. V. Mosby Company, 1913.

Res Judicatæ

ACIDOSIS

ACIDOSIS, in our minds, has from time to time been variously associated with diabetes mellitus, where it has been supposed to be the causative factor in coma; with so-called cyclical vomiting and certain other states in children; and with a great variety of other conditions including herein the acute gastro-intestinal disturbances of adults; it was long known to physiologists as an accompaniment of experimental fasting in professional fasters; more recently, attention is being called, largely by surgeons, to its frequency as an operative sequence, presumably to the administration of a general anæsthetic; and Jordan and Harris have described its occurrence in the so-called milk-sickness of some of the middle States of America.

So extensive is the literature, so complicated the study of its various phases, that no attempt is here made to do more than the title implies, namely, give some observations on the subject. Its presentation is due to the stimulation of recent personal experience, and the request of the acting secretary, on the understanding that another member of this association was to review the literature, particularly from its chemical and etiological aspects. In the absence of such a paper it is advisable briefly to mention, that the prevalent idea of authorities, seems to regard acidosis as a state of the blood and tissues showing the presence of an abnormal quantity of acid, probably beta-oxybutyric, and that this state may be at any time merged into one of acid intoxication, by the acid overcoming the basic ions (Sprigg, *Quarterly Journal of Medicine*, Vol. II, 1908-1909).

The neutralizing base is firstly the Na of the body fluids, the K of the cells, and the alkaline earths of the bones. Secondly, the NH_3 from hydrolysis of protein, the bulk of which, in the absence of alkali, would have been converted to urea, and excreted in that form; if the amount of acid introduced is so great that it cannot be either disposed of in this way or by oxidation, then the reaction of the tissue fluid is liable to alteration, and acid intoxication will ensue. There is an excess of acid, long before a reduction of

alkalinity takes place, and a state of acidosis long before acid intoxication. The state of acidosis is ascertained, (1) by the presence in the urine of acetone and diacetic acid, end-products of beta-oxybutyric acid, and occasionally that substance itself; (2) by the excretion of acetone in the saliva, giving the breath a characteristic sweetish odour; (3) by the result of the administration of two drachms of soda bicarbonate, which in the normal individual renders the urine alkaline; (4) by the reduction of the alkalinity of the blood; (5) by the amount of NH_3 in the urine.

The acid intoxication (the overcoming of the system's resources to neutralize the acid) is liable to appear suddenly, when the state of acidosis has been present for a greater or shorter length of time. It is ushered in with abundance of acetone and diacetic acid in the urine, coated tongue, heavy sweetish odour to the breath, absence of abdominal pain, no jaundice, excessive vomiting, constipation, normal or subnormal temperature, chilliness, great throbbing of the heart, swimming of the head or other interference with balance co-ordination, mental activity, and muscular weakness, and perhaps air-hunger, with appearance of arterial-coloured venous blood.

My observations will be confined chiefly to the possible role of gastro-intestinal toxins in its etiology, and the two elements of stasis and bacterial action aiding in the production of the poisons.

In *diabetes mellitus* the coma has been generally considered as due to the acid intoxication. Wolf in the "Reference Handbook of Medical Sciences," says there is little evidence of direct value that diabetic coma is due to the acid products, in spite of the weight of opinion. He claims that the studies of Iangl and his co-workers are not conclusive, but lays stress on the fact that the percentage of CO_2 in the blood falls below the normal thirty to forty volumes per cent. before coma ensues. Personal experience shows that the mental state in acid intoxication is one of excitation rather than coma, with a particularly keen memory, active mental processes, and inability to sleep. This was noticeable also in cases of milk-sickness reported by Harris. The coma of diabetes may be due to some other associated product, unless it comes from exhaustion of the nerve cells, though one's observation of patients does not suggest this. Also in the treatment of diabetic coma, the failure of soda bicarbonate to overcome it has been marked, once coma has set in, though many have had good results in staving off a threatened coma by the prompt and effective use of soda bicarbonate.

The occurrence of acidosis in fasting. Cathcart has summed up the work to date on protein metabolism. The old idea that acetone bodies were produced in the system, solely from altered metabolism of fats is not universally held now, and many agree with Naunyn, that it is chiefly produced from an altered breaking down of proteids. All agree that the absence of carbohydrates is a factor, as in the frequent diet of diabetes, or in starvation, and that the presence of fever, exclusive meat diet, occurrence of some shock or strain, may upset the normal metabolism of susceptible tissues. Recent experience of eleven days of entire absence of food, during which time, under treatment, the acetone bodies disappeared, not to return on an exclusively fat diet, tends to confirm this idea. It is well to keep in mind also the fact that in starvation there is necessarily an intestinal stasis, unless purgatives are used. It would be interesting to know if any difference in production of acetone bodies during fasting would result if cholagogues were used while the experiment was in progress.

Acidosis associated with surgical operations. Cates, Knoxville, Tenn., calls attention to the statistics of the Boston City Hospital bearing on this. Out of four hundred operations, forty-six showed signs of acidosis, with a mortality of 13 per cent., where the cause is supposed to be imperfect oxidation of the proteids of the body. J. A. Kelly assumes the presence of a similar condition to that in uræmia and acute yellow atrophy of the liver. Though the symptoms were sometimes those of intracranial pressure, there were never any post-mortem evidences of intracranial pressure, but in all there was fatty liver. Of the forty-six cases in Boston, seventeen showed evidences of acidosis on entrance, twelve developed it twelve to twenty-four hours after the anæsthetic (ten with ether, and two with nitrous oxide), and seventeen developed it later without an anæsthetic. There is no proof that it develops as a result of the anæsthetic. The general anæsthesia may precipitate an attack in a person in a condition to favour imperfect oxidation of albuminous substances. The tissue poison, beta-oxybutyric acid, is a derivative of albuminous decomposition, with acetone and diacetic acid as end-products. There were all grades of severity of symptoms, from an uncomfortable feeling with bodily lassitude in mild cases, to great restlessness and wild delirium in fatal cases.

Gundrum (*Johns Hopkins Bulletin*, June, 1909,) concludes his study of the question thus: (1) Surgical anæsthesia is followed in a certain percentage of cases by acetone and sometimes diacetic acid in the urine. (2) The character and the amount of the anæsthetic

is of no consequence. (3) Emotional individuals are more prone than phlegmatic.

As for prophylaxis in post-operative acidosis, Wallace (*Lancet*, December 5th, 1908), as the result of the study of two hundred and ninety-nine experimental cases, comes to the following conclusion: (1) Before operation, glucose is better than sodium bicarbonate. (2) Secondary vomiting is in direct relation to the amount of acetone produced. (3) The anæsthetic should be given by the open method to avoid deficient oxygenation. (4) After the operation, the stomach should be washed out with a solution of sodium bicarbonate and some of the solution should be left in.

It would be well also to avoid all chilling and prevent, as far as possible, nervous upsetting before and after the operation. Avoid also constipation and intestinal stasis—in this circumstance atropine may possibly be useful to paralyse the sympathetic fibres, thus allowing the autonomic fibres to have free play for peristalsis and intestinal elimination.

Acidosis in gastro-intestinal disturbances of adults. I would like to call attention to some possible preceding favourable conditions, such as any form of digestive disturbance which would favour the production of gastric hyperacidity, for instance, gastric or duodenal ulcer, hyperchlorhydria, and persons, otherwise normal, with a marked hyperacid stomach content. In such persons there is apt to be a predilection for proteid diet, and a minimum of carbohydrates. Also the use of abnormal quantities of acid in and with the food, or an absence of alkali. Then, too, there may be some stasis from constipation, loss of tone, obstruction, adhesions as from pylorus to hepatic flexure causing kinking of the pyloric outlet, pyloric spasm, exposure to cold, fatigue, mental excitement or exhaustion, and shock.

Elimination takes place in the urine; from the *stomach*, causing vomiting or reabsorption, if there is no vomiting; into the *bowel*, through the bile, giving reabsorption from the colon if purging is not carried on; in the *saliva*, giving the characteristic odour to the breath; from the skin, giving the same odour when there is sweating.

Post-mortems in the Boston post-operative cases, corroborated by Guthrie in the various cases of children and adults, and also those of milk-sickness studied by Harris, all showed fatty degeneration of the liver, and in some the heart and muscles showed changes.

The consideration of the so-called milk-sickness, studied by Jordan and Harris (*Journal of Infectious Diseases*, Vol. VI, No. 4,

1901) may be helpful in this condition. This is a disease, traced back to 1776, endemic in certain parts of the middle states, and causing great destruction amongst horses and cattle. From the latter, man is infected through the milk, butter and other products. The cattle show an excited stage, followed by weakness or exhaustion. There is a strong odour of acetone to the breath, fæces, skin, and hide after death, with a tendency to twitching and gasping for breath, the temperature being often subnormal.

In man there is marked constipation, prolonged and violent vomiting, thirst, weakness; sometimes there is a preliminary stage of eight to ten days, before the second stage of acute milk-sickness, and sometimes there is a chronic condition, when the acute form may be brought on by fasting, fatigue or over-exertion, or constipation. They present a typical picture of acid intoxication with acetonuria and acetone breath in every detail of symptoms, which need not be recited. There is a tendency to relapse or recurrence, as in the cyclical vomiting of children. The mortality in man ranges from 10 to 25 per cent.

Certain pastures in low wet localities are known to be milk-sickness producing. This has been well established. One instance might be cited where for nine years, with a certain part of the pasture fenced off, there had been no case. A breach in the fence permitted the cattle to reach the infected area and milk-sickness broke out in cattle and men. Every case was traced through the milk and its products to the infected cattle. There were two instances when infected meat was eaten, those partaking becoming infected, while others of the same family not partaking, remained well. They investigated the disease thoroughly, and isolated a germ, which they named *bacillus lactimorbi*. It is spore-forming and large in size. It was obtained from the spleen and intestinal mucosa, and in pure culture from the bile and liver. They fulfilled all Koch's postulates, by isolating it, growing it in pure culture, reproducing the disease in animals and recovering the same germ from them. The agglutination tests were positive also.

At autopsy there was an odour of acetone from all the tissues, sometimes there were heart changes, and fatty areas in the muscles. The duodenum and jejunum showed deep injection of the vessels—an acute enteritis. The liver was sometimes enlarged, there were always congested areas and fatty degeneration (nutmeg liver). The kidneys showed a mild glomerulitis, and sometimes parenchymatous fatty changes.

This bacillus they find widespread on alfalfa and in cow manure,

apparently identical bacteriologically with *bacillus lactimorbi* but not showing pathogenicity. Jordan and Harris suggest that there may be certain conditions necessary to render the germ pathogenic, and in this connexion there is some suspicion that the presence of a certain variety of golden-rod near alfalfa, other conditions of soil, moisture, etc., being favourable, may produce a pathogenic variety. Not all persons are susceptible, and it may be that certain conditions of the individual may render him susceptible after ingesting the germ. The post mortem on one boy showed constrictions in the intestines every few inches, but no scar tissue at these places, and with the fatty liver condition.

Intestinal obstruction. Many observations, clinical and experimental show that under certain conditions powerful toxins are produced in or by the intestines. In the normal individual it is a very common observation that if constipation is present and no purgative taken, nature frequently comes to the relief with the production of one or more loose stools, accompanied sometimes with cramping pains; and the obstruction is thus overcome, forcing out the hard faeces. It is a common observation also in many forms of obstruction, as in cancer of the bowel, that a desperate toxic condition develops, which is fatal if the obstruction is not overcome. The same is true of strangulated hernia, volvulus, the acute symptoms of enterospasm, kinks from adhesions, etc., the effort being made possibly to overcome obstruction. Perhaps this is attained by the development of some toxic substance, which, if the obstacle be removed thereby, or with surgical or other effective intervention, is neutralized, but if not, serious results may ensue.

It is interesting in this connexion to take note of the work of experimenters in this line. Whipple and Stone of Johns Hopkins, for example, have isolated a piece of bowel, occluded it at both ends under strict aseptic precautions, and the dogs have died in from twelve hours to three days with signs of acute toxæmia. They took the precaution of washing out the piece of gut first, with similar results. They treated it with antiseptics and made cultures before and after experiments, but recovered no germ. In every case there was liver destruction from the toxine. They isolated a toxine from the endothelium, which injected into other dogs caused death similarly. They have been unable to discover the chemistry of the substance, but have succeeded in immunizing dogs with it against its action. After the toxic symptoms subsided, the dogs were immunized, so that late complete obstruction produced no similar toxic effect. By graduated doses they immunized other dogs before

experiment so that no fatal result ensued on tying off a piece of their bowel.

At London, Ontario, recently Gurd, of Montreal, read a paper which unfortunately I just missed owing to the simultaneous meeting of sections; I am awaiting its publication but understand that he produced a toxine in the intestine by ligature of the portal vein.

I think from these and similar observations, and from the fact that in milk-sickness there is always obstinate constipation, that after abdominal operations there is a possibility of some stasis, even ileus; that in all bowel obstructive conditions there seems to be stasis; and certainly in some, possibly in many or all cases of acidosis, there is some form of a greater or lesser condition of stasis; we are therefore justified in future in keeping in mind the possibility of thus producing favourable conditions for the ensuance of the state of acidosis or acid intoxication. Then, too, it would be well not to forget the findings of Jordan and Harris as to the germ, *bacillus lactimorbi*, and that some form of obstruction or stasis, may be a favouring factor for its growth in the small intestine and the production of the altered metabolism resulting in the acid intoxication. It is possible, and there are some suggestions indicating it, that time may show that there is some upsetting of the balance between the autonomic and sympathetic nerve systems.

To summarize: acidosis seems to be a state of the blood and tissues readily leading to acute acid intoxication, with a varied incidence of predisposing causes as to diet, starvation, acid contents of stomach, stress, constipation, or bowel stasis.

It is of great importance to the surgeon to prevent it, and to treat it effectively, when met with.

It may be of great importance to the hygienist and to the province, from the possibility of preventable germ infection. Since the condition of climate and wet pasture in parts of the Fraser Valley are favourable, it would not be amiss to investigate this subject in British Columbia.

It is of importance to the general practitioner, and suggests the added importance of normal bowel action in all patients, and makes one ask the question whether infected milk is a possible factor in the cause of the prevalent tendency to acidosis in children. Sodium bicarbonate and cholagogues, direct and indirect, must not be forgotten in prophylaxis and treatment. A recent experience of a patient receiving intravenous injection of soda bicarbonate was far from pleasurable, though effective, and was followed by a typical

gastric hypersensitization to it in any form or guise. In feeding early and mild cases carbohydrates are important, but in late and severe cases, with damaged liver, fats play an important role, as they are taken up without passing through the liver.

I shall not take more time here than to mention the importance of bismuth and x-rays, in the detection of various anomalies of the intestinal tract.

Lastly, attention should be called specially to the autopsy findings of fatty liver in all these cases. The liver seems to bear the brunt of the toxins taken up from the intestine, and when liver inadequacy to convert the ammonia to urea occurs, the gateway is open for the production of acidosis in the system; in other words, the liver is able to detoxicate the toxins absorbed from the intestine, up to a certain point of damage to its own structure.

Vancouver.

J. W. McINTOSH

THE annual meeting of the Royal Edward Institute for the study, prevention and cure of tuberculosis, Montreal, was held November 21st. The president, Colonel J. H. Burland, spoke of the insanitary conditions existant in the city and the necessity for legislation to prevent such conditions. The number of deaths from tuberculosis in Montreal is increasing rather than decreasing in spite of all modern advances in medical knowledge, and the fault seems to lie largely in the lack of proper sanitation. Last year, eight hundred and sixty persons died from tuberculosis, while during the previous year only seven hundred and fifty-six deaths occurred. On the motion of Dr. Kennedy, a resolution was passed that a week should be chosen next February or March, when lectures on tuberculosis should be given and articles published in the daily press which would increase the general knowledge concerning the disease and its prevention. The resignation of Mr. Robert Archer, the treasurer, was received with regret.

Retrospect of Surgery

THE OPERATIVE TREATMENT OF PERSISTENT CONSTIPATION. BY
V. SCHMIEDEN, *Verhandlungen der Deutschen Gesellschaft für
Chirurgie*, March, 1913, II, 96.

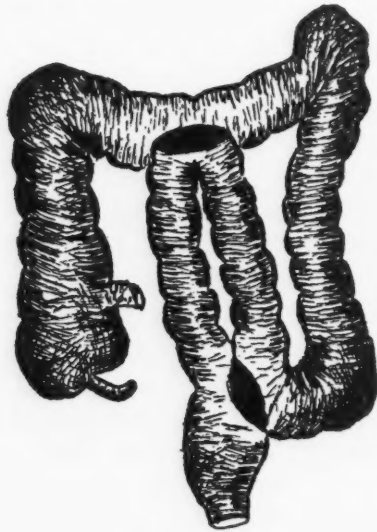
IN cases of constipation in which, through *x-ray* or other means of examination, the seat of the disease can be definitely located and a pathologic-anatomic cause found for the disorder (tumour, adhesions, kinking, or stenosis), the prognosis is favourable. Operation is the logical form of therapy. In other cases, in which the disturbance is purely functional and extends over the whole or a large part of the intestinal tract, it is more difficult to decide from the information obtained by examination, whether or not surgical interference will be attended with good results.

Professor Schmieden reports a case of atony of the whole colon in an adult thirty-nine years of age, associated with great dilatation (the hypokinetic type of Schwarz) and marked congenital elongation of the mesentery of the large bowel,—the anatomical condition resembling the transitional form of Hirschsprung's disease. Constipation in a mild form had been present in childhood but had gradually become worse, leading eventually to great functional disturbance,—general weakness, incapacity for work, and mental sluggishness. Bowel movements occurred only every eight days; stools passed in hard, dry masses; no blood. The rectal speculum passed thirty-three centimetres without the least resistance and gave the impression that, if the instrument had been longer, it could have been inserted much higher. *X-ray* examination showed a sigmoid loop reaching high up into the epigastrium. This loop together with a festooned transverse colon added so much to the length of the large bowel that constipation was the result. The bismuth contrast showed, further, almost complete absence of those constrictions in the wall of the colon between the plicæ semilunares which are a mark of bowel competency and are necessary for normal bowel activity.

On these observations a practical operative treatment had to be built, which would effect, without too great risk to the patient, an essential shortening in the colon tract and an acceleration of

function. At the same time the possibility of retention of faeces in the abandoned portion of the route had to be guarded against.

Professor Schmieden lays stress upon the careful preliminary study of the anatomy and function of the bowel in such cases, in order that the primary operation may be complete and efficient, and multiple operations need not subsequently be done.



The accompanying sketch shows the surgical procedure adopted in the case under consideration.

After the fourth day movements of the bowel occurred daily. Later *x*-ray observations showed that the bismuth ingested passed from the ascending colon to the rectum by the shortest route.

At the convention of the Union of Manitoba Municipalities, on November 27th last, it was resolved that, "in view of the high cost of living and the growing maintenance of the hospitals of Manitoba, it should be suggested that a maximum charge of \$1.50 a day, instead of \$1.00, should be made under the Charities Aid Act for patients, in addition to the government contribution of twenty-five cents for each day of treatment.

German Literature

ABSTRACTS OF GERMAN LITERATURE

DICHOTOMY. *Muenchener Medizinische Wochenschrift.*

“ARE you for or against dichotomy?” This question has been much asked of late among Munich doctors, and I suppose very many who are thus questioned would reply: what then is this dichotomy? A superficial observer might give the following definition: By dichotomy is meant a division of the fee between two doctors, one of whom has, for some reason, given his patient into the care of the other. For example a specialist in medicine gives a patient to a surgeon for operation. The surgeon then presents his colleague with a certain percentage of the fee he received for the operation. At this definition I hear all the doctors crying with one voice: this practice is unworthy of our profession. And this I do not deny, for it is indeed an unethical procedure; but even with this dictum the subject cannot be closed, for much more is involved in this question than first meets the eye. The fee-splitting may be the result of a feeling of gratitude on the part of the surgeon for the assignment of the case; or from an idea that it is the fair thing to do. Nietzsche says: “We call him good who follows where his heart leads, but also him who hears alone the call of duty.” And Spinoza says: “Nothing is good or bad for us that has not something to do with us”. . . . The general practitioner will probably recall many instances where he has made a correct diagnosis, advised operation and saved the patient’s life. By means of his keen intellect and medical skill he has been able to do this; and for this service he may receive the paltry sum of five or ten marks. The surgeon or specialist who is called in undoubtedly helps to save this life, certainly gets all the credit, and receives many times as great a sum as the poor practitioner who probably gets as much as the tip a thankful patient presents to the orderly on leaving the hospital. But we must not belittle the services of the surgeon who, by means of his wider knowledge, can deftly remove the source of trouble diagnosed by the physician. . . . Now suppose the surgeon be a sensitive creature who thinks of others and realizes the value of the physician’s art. He will say: it is unfair that I should receive so

much more remuneration than he. But the surgeon is perhaps also an ethical being. How then is he to repay the physician? And here lies the real problem of dichotomy.

A CASE OF LEAD POISONING.

A peculiar case of lead poisoning is described in number XXI of the *Muenchener Medizinische Wochenschrift*. A healthy child of six months, breast fed, began suddenly to lose weight, the cause of which could not be ascertained. In three weeks the child was in a dangerously emaciated condition. Now suddenly appeared a new symptom, a severe stomatitis of a nature to suggest lead poisoning. Everything in the neighbourhood of the child that might contain lead was examined, even the bed covers, with negative findings. The rubber sheeting that covered the mattress was finally examined and found to contain lead. On removing the sheeting, the child's condition immediately improved and was soon again normal.

TUBERCULOUS MENINGITIS WITH RECOVERY. *Muenchener Medizinische Wochenschrift*, No XXVI.

From the medical clinic of Jena comes the report of two cases to be added to the existing list of eighteen, reported from various parts, of recovery from tuberculous meningitis. The treatment was lumbar puncture for relief of symptoms. The first case is that of a child of eighteen months. The rigidity of the neck, sensory disturbances, Kernig's phenomenon, and clear cerebrospinal fluid, rich in lymphocytes and containing tubercle bacilli, leave no room for doubt as to the diagnosis. Lumbar puncture was performed five times during a period of three weeks, and in all 55 c.cm. of fluid removed. Each puncture was followed by marked relief of symptoms. The cerebrospinal fluid of the third puncture, performed on the fourth day after admission, contained no tubercle bacilli, and examination of the two subsequent specimens was also negative.

The second case was that of a man of twenty-one years of age with definite signs of meningitis and tubercle bacilli in the cerebrospinal fluid. In this case the bacilli were still present on examination of the fluid at the third puncture, but a guinea pig that was injected with the fluid remained healthy, showing a decrease in the virulence of the organisms.

"A SIMPLE EXPEDIENT."

Adolf Nussbaum, of the Bonn surgical clinic, describes a simple expedient for the reduction of herniæ in infants. There are many cases of herniæ, he says, that show no signs of strangulation but are apparently irreducible. Whether they are actually so cannot be ascertained without an anæsthetic owing to the rigidity of the abdominal wall; and anæsthesia is not always advisable or convenient. The author noticed by chance that when one blew sharply upon a child's face it ceased crying at once and relaxed the abdomen. He has utilized this discovery with marked success. The child is placed upon its back with the pelvis raised and the head held so that it cannot turn it away, and an assistant blows sharply upon its face. Crying at once ceases, the abdomen relaxes, and taxis can be performed. The child breathes superficially for a time and when a few deep breaths indicate the onset of another attack of crying the face is again blown upon, until finally the hernia, if reducible, is replaced.

London, Ontario.

G. C. HALE.

Obituary

DR. L. C. PREVOST, of Ottawa, died of tuberculosis, at Saranac Lake, N.Y., on November 6th. Dr. Prevost, who was in the sixty-third year of his age, was born at St. Jerome, Que., and was educated in Montreal. He was a well-known gynæcologist and practised in Ottawa until about a year ago. During his professional career, Dr. Prevost held many important positions, among them the presidency of the Ontario Medical Association, the presidency of the French Canadian Institute at Ottawa, and membership in the International Association of Surgeons at Brussels.

DR. THEOPHILE LAFFERTY died recently at St. Mary's Hospital, Detroit. Dr. Lafferty was born near Amherstburg, Ont.; he was in the thirty-eighth year of his age. He was a graduate of the Detroit Medical College.

DR. CHARLES F. DURAND, of Toronto, died November 10th. Dr. Durand was born at Toronto and graduated in 1884 from the university of his native city. He was about fifty-one years of age.

The greater part of his professional career was spent in Buffalo and in Lockport, but he returned to Toronto some twelve months ago. He leaves a widow and two sons.

DR. JOHN CAVEN, of Toronto, died December 10th. Dr. Caven was born at St. Mary's, Ontario, in 1861, and was the eldest son of the late Principal Caven, of Knox College. He was a graduate of the Royal College of Surgeons. For seven years Dr. Caven was professor of pathology at Toronto University, and was one of Toronto's best known physicians.

DR. C. L. SMITH, of Medicine Hat, Alberta, died at St. Paul, Minnesota. Dr. Smith was a well-known resident of Medicine Hat, where he had been in practice for some years. He was keenly interested in municipal matters and was a member of the local Masonic lodge and of the Oddfellows. He was also C. P. R. physician for Lethbridge and district. He leaves a wife and two children.

DR. JOHN M. DEE, of Stamford, Ontario, died recently at the age of eighty. He was born at Stamford and was one of the best known practitioners in the Niagara peninsula. He continued his professional work until three years ago, when failing health made it necessary for him to retire from active practice.

DR. E. J. BERNARD, of Point St. Charles, Montreal, died at the Notre Dame Hospital, December 2nd. He was in the thirty-third year of his age and was unmarried.

DR. ARTHUR FISHER, of Montreal, died December 3rd, in the ninety-eighth year of his age. Born in Montreal on March 2nd, 1816, it was fitting the close of a long and useful life should come in his native city, where indeed most of that life had been spent. Dr. Fisher was educated in Montreal and in Edinburgh, where he took his degree in medicine: he was a licentiate of the Edinburgh Royal College of Surgeons. On his return to Montreal, Dr. Fisher took up the practice of medicine and became one of the first advocates of homeopathy, which he subsequently practised. He was a man of great intellectual power and a theorist in many respects in advance of his time. An exceptional man from many points of view, Dr. Fisher enjoyed the distinction of living under six different sovereigns. In politics he was an ardent Liberal, and as a citizen he was loyal and far-seeing. For some years he was blind and at the age of ninety-two regained his sight after an operation for cataract.

News

MARITIME PROVINCES

A SLIGHT epidemic of diphtheria recently occurred at Sunny Brae, a small place near Moncton.

THE following contagious and infectious diseases were reported in Moncton during the past year: diphtheria, 17 cases; typhoid, 22 cases, 3 deaths; scarlet fever, 4 cases; measles, 377 cases, 15 deaths. An epidemic of measles broke out in December, 1912, and during February, 1913, 150 cases of the disease were reported. The epidemic subsided in May, when 25 cases were reported.

ONTARIO

THE formal opening of the Essex County Tuberculosis Hospital, which has been built at Union by the Daughters of the Empire, took place on Sunday, November 9th. The total cost of the sanitarium, consisting of a main building with a wing on either side, has been \$25,000, the building and equipment amounting to \$13,000. The property extends over sixteen acres with over a thousand feet of lake frontage.

It is probable that a by-law will be submitted this month to the ratepayers of Toronto with the object of providing \$200,000 for a new hospital in Riverdale.

SEVERAL cases of smallpox have been discovered by the provincial authorities at Buckingham and at Angers. At Angers concealed cases of the disease were found in twenty-three houses.

A SET of moving pictures on tuberculosis has been prepared by the provincial health department. They will be shown at different places throughout the province and free lectures will be given to illustrate and explain them.

A DEPUTATION representing the various women's institutes of the province recently waited upon the Minister of Education with

the request that the medical inspection of schools—both rural and urban—be made compulsory.

THE provisional plans have been passed for a new hospital at Nairn. A hospital is also to be built at Chapleau. It will be named the Chapleau Cottage Hospital and will include a dispensary and a training school for nurses.

THE town of Aberdeen is suffering from an outbreak of diphtheria. More than seven hundred cases of the disease have been reported since the beginning of last June. The disease has also been prevalent in Elginburg and Glenvale.

THE Hopewell Isolation Hospital at St. Thomas was dedicated on Thursday, November 20th. It will consist of three cottages, two of which are already completed; the third, which will be smaller than the other two, will be commenced very shortly and will be used for cases of smallpox.

THE question of the water supply was discussed at a recent meeting of the Niagara District Medical Association. The government is enlarging the Welland Canal with the result that the places situated along the banks of the canal will no longer be able to obtain from it their supply of fresh water. Dr. McCullough, however, assured the members of the association that a pipe would be laid from Port Colborne, by which water from Lake Erie would be supplied.

DURING the month of November, the following cases of communicable disease were reported in the province. The returns for tuberculosis are as yet far from complete. Smallpox, 54 cases; scarlet fever, 298 cases, 8 deaths; measles, 175 cases, 5 deaths; diphtheria, 319 cases, 22 deaths; whooping cough, 63 cases, 8 deaths; typhoid fever, 120 cases, 28 deaths; tuberculosis, 90 cases, 48 deaths; infantile paralysis, 1 case; cerebrospinal meningitis, 3 deaths. The total number of cases was 1,123, and of deaths 119, whereas in November, 1912, 864 cases and 136 deaths were reported.

THE new wing which has just been added to the St. Joseph's Hospital at Chatham, was opened December 1st. The hospital itself was first opened in 1892.

A GRANT of \$8,927 was made recently to the Sick Children's Hospital by the Toronto Board of Control. The amount will cover the cost of treating over twenty-five thousand patients during the past year.

A GRADUATE nurse is to be appointed to conduct the medical inspection of children in the public schools of Peterborough.

THE plans are being prepared for a new sanitarium at St. Catharines.

AS PART of an educational campaign against tuberculosis, which is being conducted by the National Sanitarium Association, addresses on tuberculosis and on simple rules of health were given in schools throughout the province on Friday, November 28th, and every possible means taken to impress upon the minds of the children useful facts concerning the disease. On Sunday, November 30th, reference to the campaign was made in sermons given in many of the churches of the province.

BY-LAWS will be submitted to the ratepayers of Toronto at the beginning of this month, to grant \$250,000 each to the proposed Riverdale and Howard Park Hospitals. If the grants are made, however, nothing will be paid to either of the hospital boards until subscriptions amounting to \$50,000 have been guaranteed from other sources.

ONE hundred and sixty-four cases of contagious disease were reported in Ottawa during the month of November. They were: scarlet fever, 62; diphtheria, 48; smallpox, 10; chicken pox, 20; tuberculosis, 9; typhoid fever, 6; measles, 7; and whooping cough, 2.

THE annual report of the medical officer of health for Wellesley township shows that during the year three outbreaks of smallpox have occurred. In most instances the cases have been extremely mild in character, but a few were of more severe type. There has been also a good deal of measles throughout the year, and a good deal of typhoid during the summer and autumn months.

THE fees charged by the physicians of Windsor and district have been advanced, commencing from the first of the month. In

future, a charge of three dollars will be made for night calls, two dollars for day visits, and fifty cents for advice given by telephone.

QUEBEC

DR. PAQUIN has been appointed chief medical officer of the city of Quebec, at a salary of \$2,000 a year, in place of Dr. Catellier, who is now consulting physician for the city, also at a salary of \$2,000 a year. Dr. Gosselin has been appointed assistant to Dr. Paquin and will receive \$1,200 a year.

DURING the week ending November 29th, fifty-four cases of diphtheria and five resultant deaths were reported in Montreal. There were reported also thirty-four cases of scarlet fever and forty-four of chicken-pox.

THE contract has been given for an addition to the Notre Dame Hospital, at Montreal. This addition will take the form of a building of four storeys, of stone and steel construction with concrete foundation. The cost is estimated at twelve thousand dollars.

DR. LOUIS LABERGE, who has held the position of medical officer of health at Montreal for twenty-seven years, has resigned and Dr. Sepherin Boucher has been appointed to succeed him.

AN epidemic of typhoid is reported from the village of La Patrie, situated nine miles from Scotstown. Fifty cases already have occurred, only one of which has resulted in death.

AFTER considerable discussion concerning the site, it has been decided to build the Quebec Hospital on a property belonging to the Grey Nuns. The site has been given by the nuns, who are in charge of the Beauport Asylum, in exchange for the grounds and buildings of the Mastai institution which was annexed some time ago by the city of Quebec. The plans have now been prepared for a building which will cost about seventy-five thousand dollars.

MANITOBA

DR. GRAIN has been appointed medical superintendent of the Manitoba Indian Reserves, to succeed the late Dr. Orton.

A MEDICAL inspection of children in the schools of Portage

La Prairie has been commenced. The inspection has been undertaken by Dr. E. A. Walkey, the medical officer of health, and Dr. W. H. Rennie.

THE grant made by the city of Winnipeg to the Grace Hospital has been increased from \$1,500 to \$2,000. During the past twelve months, 481 adult charity patients and 630 children have been treated in the hospital, and of these only 200 were able to make a daily payment of one dollar towards the expenses incurred by the hospital.

THE plans and specifications have been prepared for an extension to the Selkirk Hospital for the Insane.

ALBERTA

THE following cases of infectious disease occurred in Edmonton during the month of October: diphtheria, 12; scarlet fever, 8; erysipelas, 5; typhoid fever, 23; chicken-pox, 3; measles, 6; mumps, 1.

At a recent meeting of the directors of the Macleod Hospital, it was decided that a list of questions respecting the financial condition of a patient should be signed on admission, and on discharge a promissary note should be given by the patient, this note to mature not later than one month from date of discharge. It was also decided that in the case of patients suffering from the effects of excessive drinking, all fees should be paid in advance in addition to the twenty-five dollars chargeable to such cases on admission.

SASKATCHEWAN

BY-LAWS for two thousand five hundred dollars are to be submitted to the ratepayers of the town and of the municipality of Rosthern; the money, if granted, will be used to purchase the Alexandra Hospital at Rosthern.

THE following is a list of the cases of infectious and contagious disease reported in the province during the month of October; typhoid fever, 118; diphtheria, 4; scarlet fever, 30; measles, 5; smallpox, 1; chicken-pox, 18; tuberculosis, 3; whooping cough, 35; mumps, 1; cerebrospinal meningitis, 1.

THE old hospital at Kerrobert, which was built by Dr. Neville and Dr. Sterling, and has been closed for some time, is now to be reopened. It is a commodious eight-roomed building, containing five wards and an operating room.

BRITISH COLUMBIA

THE following is the list of candidates who have passed successfully the examinations of the College of Physicians and Surgeons of British Columbia: Drs. T. H. Agnew, H. L. Bryce, A. J. Brown, J. Christie, G. E. Darby, O. E. Finch, A. R. Gilchrist, H. Grey, W. R. Haight, G. Jefferson, R. E. Johnson, W. T. Lockhart, J. J. Mason, M. T. McEachern, J. E. Montgomery, H. H. Planche, H. H. Perry, W. L. Robinson, L. M. Rice, J. A. Smith, J. L. Telford, H. A. Watson, J. H. Wilkinson.

IN future, all persons travelling from the United States to British Columbia, if called upon to do so, must produce certificates of vaccination dated within six months of the time of presentation. This regulation has been made because of the prevalence of small-pox in certain parts of the State of Washington.

IT is the intention to erect a new building for the sanitarium at Tranquille. The present building is old and out of date.

AT the monthly meeting of the Victorian Order of Nurses for Canada, held December 4th, application for \$1,500 was made, and granted, towards the building of a much needed hospital at Ganges, Salt Spring Island.

ASSOCIATION NEWS

THE forty-seventh annual meeting of the Canadian Medical Association is to be held in St. John, New Brunswick, from July 7th to 10th, 1914. Dr. Murray MacLaren is the president-elect, and Dr. G. C. VanWart, Fredericton, vice-president for New Brunswick. The date of the meeting was given a great deal of consideration, and July 7th, it is felt, will be found suitable in every way. Not only does it conflict as little as possible with other association meetings, but it is the ideal time of the year for a trip down by the sea. The members of the profession in St. John are en-

thusiastic over the pleasant duty which falls to their lot, and early in September they organized and appointed committees to carry out the details of the work. These committees have been actively engaged since that time in perfecting arrangements, so much so that the preliminary details are practically completed.

The chairman of the committee of arrangements is Dr. J. V. Anglin, and the local secretary Dr. J. S. Bentley; and the local chairmen and secretaries of the various sub-committees are respectively as follows. medicine, S. S. Skinner and A. E. Logie; surgery, A. F. Emery and L. M. Curren; obstetrics and gynaecology, G. A. B. Addy and C. M. Pratt; public health, laboratory work and pathology, J. W. Daniel and W. Warwick; eye, ear, nose and throat, J. R. McIntosh and A. P. Crocket; x-rays, G. G. Corbet and J. L. Duval; finance, T. E. Bishop and W. E. Rowley; reception, Thos. Walker and F. T. Dunlop; transportation and publicity, W. A. Christie and G. G. Melvin; accommodation, W. F. Roberts and A. E. Macaulay; exhibits, T. D. Walker and D. C. Malcolm; entertainment, F. L. Kenny and F. J. Hogan; credentials and registration, J. M. Barry and C. M. Kelly. They will be glad to receive suggestions, or to give any information in their various departments.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Canada Lancet, December, 1913:

School hygiene and child life	Sir James Grant.
The language of the abdomen	S. M. Hay.
President's address: Academy of Medicine, Toronto	H. J. Hamilton.
Foreign bodies within the eyeball	G. S. Ryerson.

Western Canada Medical Journal, October, 1913:

Serums, bacterial vaccines, and phylacogens	Bruce Hill.
Closure of perforation of septum of the nose	C.B. Bearman.
Police control of prostitution	G.S. Peterkin.

Dominion Medical Monthly, December, 1913:

President's address—delivered before the
Academy of Medicine, Toronto . H. J. Hamilton.

The Public Health Journal, November, 1913:

Why are modern infectious disease mild? . H. W. Hill.
Civil engineering and its relation to public
health J. Antonisen.
Dental caries in school children and dental
inspection W. D. Cowan.
The need for more complete organization in
public health work H. J. Pickard.

The Canadian Journal of Medicine and Surgery, December, 1913:

Foreign bodies in the air passages . . R. J. Godlee.
The modern treatment of gastric disease . J. Patterson.
The association of chorea with rheumatism . H. Parsons.
Heart lesions in rheumatism A. R. Gordon.
Rheumatism in childhood J. S. Graham.
Rheumatism in adults W. J. Wilson.

Le Bulletin Médical de Québec, December, 1913:

La greffe osseuse comme traitement curatif
dans le mal de Pott C. Geggie.
Un cas d'empoisonnement par l'Huile de
cèdre A. Jobin.
Comment combattre avec efficacité la Tu-
berculose dans les municipalités rurales . J. Savary.

The Western Medical News, November, 1913:

Sanatorium care of the tuberculous . . W. M. Hart.

The Canadian Practitioner and Review, December, 1913:

The employment of radium in the treat-
ment of cancer of the prostate . . O. Pasteur.
and Dr. Degrais.

L'Union Médicale du Canada, December, 1913:

Pseudarthrose de l'humerus. Etude (1) J. A. St. Pierre.

Le Journal de Médecine et de Chirurgie, November, 1913:

La constante d'Ambard G. H. Baril.

Medical Societies

TORONTO ACADEMY OF MEDICINE

At a special meeting of the Toronto Academy of Medicine, which took place November 24th, an address on "Modern treatment of gastric disease" was delivered by Mr. Herbert J. Patterson, of London. A discussion of some length ensued, opened by Dr. H. A. Bruce, in which Drs. Primrose, McKeown, and Graham Chambers took part. Dr. Primrose referred to the value of the gastro-jejunostomy operation in cases of duodenal ulcer and gastric carcinoma. He also spoke of the importance attached by Dr. Patterson to gastric analysis as a very material aid to diagnosis, expressing the opinion that the method would be employed more frequently in the future by those who had enjoyed the privilege of listening to Dr. Patterson's address. Referring to the question of pain in the epigastrium in cases of appendicitis, Dr. McKeown thought it probable that it was due rather to gaseous distension or spasm of the pylorus than to actual irritation of the mucous membrane of the stomach by the presence of an increased quantity of acid. He was somewhat doubtful of the beneficial results of blood transfusion. He also referred to a statement made by Dr. Primrose, that cancer may result from ulcer of the stomach, contending that if this were so, carcinoma of the duodenum would be much more common, since duodenal ulcer is more frequently met with than is gastric ulcer. He was glad to hear Mr. Patterson say that in hæmorrhage of the stomach it was better not to operate. Dr. Graham Chambers suggested that in many instances surgeons were inclined to base a diagnosis upon a physical examination taken in conjunction with one or two subjective symptoms, without studying sufficiently other aspects of the case with its previous history. He thought that appendicitis was often preceded by gastric disease, and referred to the nervous origin of many cases of gastric and duodenal ulcer. In cases of slight stenosis, he considered that medical treatment might be effectual, but surgical intervention was necessary where there existed pyloric stenosis due to scar tissue.

Dr. Bruce then moved a vote of thanks to Mr. Patterson. He said that Mr. Patterson was well fitted to give such a paper on

gastric surgery, as some years ago he was Hunterian Professor and delivered a number of lectures before the Royal College of Surgeons on the same subject. Last year, Mr. Patterson published a book on gastric surgery, which is now running through the second edition and is considered the finest text-book extant on the subject. Dr. Bruce felt that he expressed the feeling of all those present when he said that it has afforded them the keenest pleasure to listen to the masterly address which had just been delivered. Dr. Cotton, in seconding the motion, said that but a few years ago physicians had given learned discourses on the treatment of indigestion; now, however, through the good work of Mr. Patterson, the Mayos, and others, the tables were turned, and the question was treated more from the surgical standpoint.

In reply, Mr. Patterson expressed his pleasure in speaking before the Academy and in listening to the discussion evoked by his paper. Referring to a question put by Dr. Primrose concerning the cause of failure in the operation of gastro-jejunostomy, he said that in his opinion failure was the frequent result of an unnecessary operation, or of an operation performed when some other condition was present, such as disease of the appendix, intestinal stasis, or gallstones. The position of the opening in the stomach was important; it should be at the pyloric end of the stomach and as close to the pylorus as possible. Continuing, he said that there was great disadvantage in making this opening by the posterior method, as working from the back of the stomach, one cannot make the opening as close to the pylorus as by the anterior method. The posterior method is physiologically unsound but anatomically good, and he had obtained better results by the adoption of the anterior method. He did not dispute the fact that carcinoma occasionally becomes grafted upon chronic ulcers, but he did not think that it was such a frequent occurrence as was taught by the Mayos. As to the cause of epigastric pain, he was of the opinion that it was due probably to the increase of acid after digestion and the consequent irritation of the ulcer. Dr. Chambers had suggested that the administration of alkalis by the mouth might be of benefit, and an operation avoided by this means. In this connexion he would like to point out that the stomach would get accustomed to such alkalis and that consequently their value would be lessened. Sometimes two or three years washing out of the stomach would do good, but it would not cure; after a gastro-jejunostomy the patient is cured.